



राष्ट्रीय फैशन प्रौद्योगिकी
संस्थान, चेन्नै
National Institute of Fashion
Technology, Chennai
Ministry of Textiles, Government of India



युवा कार्यक्रम
एवं खेल मंत्रालय
MINISTRY OF
YOUTH AFFAIRS
AND SPORTS



INTERNATIONAL CONFERENCE 2026

DESIGNING THE FUTURE

CREATIVITY, INCLUSION AND
TECHNOLOGY IN YOUTH INNOVATION

25 – 27 March 2026

NIFT Chennai | India

BOOK OF ABSTRACTS



Future Fashion, Living Systems &
Sensory Materiality



Fashion Intelligent Technologies,
Hybrid Craft & Digital Futures



Social Imagination, Inclusion &
Ethical Design Innovation

ICDF 2026

NIFT CH - MoYAS
INTERNATIONAL CONFERENCE 2026▽

**DESIGNING THE FUTURE : CREATIVITY, INCLUSION AND
TECHNOLOGY IN YOUTH INNOVATION**

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DISCLAIMER

This book presents the abstracts shortlisted for the ICDF International Conference 2026. It serves as a comprehensive compilation, from which entries have been selected for both oral and poster presentations.

NIFT CH - MoYAS

INTERNATIONAL CONFERENCE 2026 ▽

**DESIGNING THE FUTURE : CREATIVITY, INCLUSION AND
TECHNOLOGY IN YOUTH INNOVATION**

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FOREWORD

It is with great pride that I welcome you to the International Conference on Designing the Future: Creativity, Inclusion and Technology in Youth Innovation. This book of abstracts stands as a celebration of the imagination, resilience, and collaborative spirit of young innovators from across the globe.

Within these pages, you will encounter ideas that challenge convention, perspectives that broaden our understanding, and visions that illuminate pathways toward a more inclusive, creative, and technologically empowered future. Each abstract reflects not only the courage to dream but also the determination to harness technology as a tool for meaningful change.

The selection of papers presented here has been guided by a transparent and rigorous process, ensuring that the diversity of thought, the quality of innovation, and the transformative role of technology are represented fairly. This commitment strengthens the integrity of the conference and highlights the value of openness in fostering genuine dialogue and collaboration.

As Chair of this conference, I am deeply inspired by the energy and dedication embodied in these contributions. May this volume serve not only as a record of scholarly exchange but also as a source of inspiration—encouraging us all to connect, to imagine boldly, and to carry forward the spirit of creativity, inclusion, and technology in shaping the future.

Together, let us design the future.

Regards,

Prof. Dr. Divya Satyan
Conference Chair &
Director, NIFT Chennai

ABOUT THE ORGANISERS

NATIONAL INSTITUTE OF FASHION TECHNOLOGY (NIFT), CHENNAI

Established in 1995 by the Ministry of Textiles, Government of India, NIFT Chennai is one of India's leading institutions in design, management and technology education. Known for its cutting-edge facilities, strong industry engagement and academic excellence, NIFT Chennai promotes creativity, sustainability, innovation and interdisciplinary learning to develop future-ready professionals.

MINISTRY OF YOUTH AFFAIRS & SPORTS (MoYAS)

The Ministry of Youth Affairs and Sports, Government of India, empowers the nation's youth through leadership, entrepreneurship, community development and engagement. It also focuses on the development of sports infrastructure and talent while preparing the youth to contribute meaningfully to national progress and global development.

CONFERENCE OVERVIEW

The International Conference on Designing the Future: Creativity, Inclusion & Technology in Youth Innovation serves as a global platform for scholars, innovators, designers, technologists, thinkers, industry professionals and youth leaders to exchange ideas and explore creative, inclusive and technology-driven solutions for future challenges.

The conference encourages:

- Interdisciplinary dialogue
- Youth-led research and innovation
- Sustainable and inclusive practices
- Technology-enabled transformation

CONFERENCE OBJECTIVES & RELEVANCE

OBJECTIVES

- Create a global platform for knowledge exchange
- Foster interdisciplinary discussions
- Promote creative, inclusive & technology-driven solutions
- Highlight youth-led innovation and research
- Encourage non-linear and future-oriented thinking

EXPECTED OUTCOMES

- Greater understanding of emerging trends
- Stronger academia–industry linkages
- Global networking and collaboration
- Visibility for youth projects & start-ups
- Actionable insights for policymakers & educators

RELEVANCE

The conference addresses global challenges through the integration of design, technology, sustainability, inclusion and youth empowerment, preparing future-ready solutions for creative industries and knowledge-driven economies.

SUB-THEMES & PLENARY CONCEPTS

SUB-THEME 1 : FUTURE FASHION, LIVING SYSTEMS & SENSORY MATERIALITY

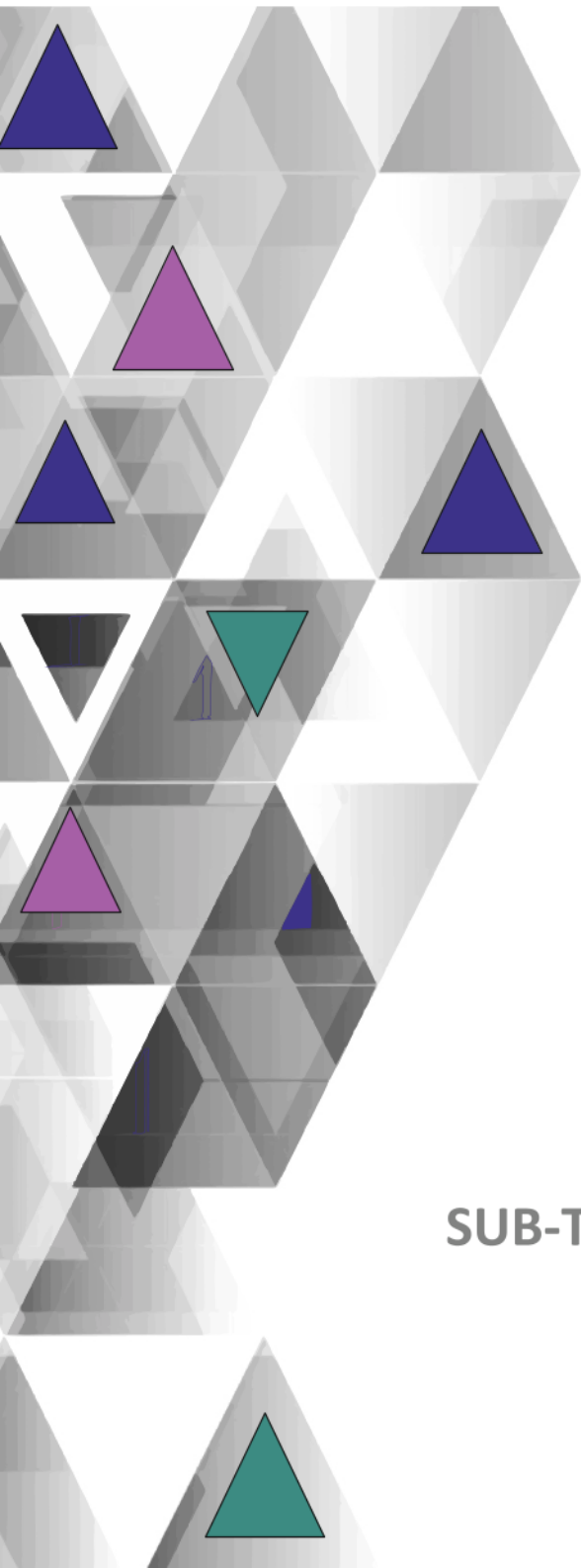
- Focus: Materials, bodies, habitats, emotions, lifestyle, adaptive design
- Living Systems: Responsive materials & spaces
- Human-Experience Ecosystem: Wellbeing through design
- Regenerative Futures: Circular aesthetics
- Emotive Design: Wearable & spatial storytelling
- Beyond Surfaces: Bio-fabrics & hybrid spaces

SUB-THEME 2 : FASHION INTELLIGENT TECHNOLOGIES, HYBRID CRAFT & DIGITAL FUTURES

- Focus: AI, robotics, XR, intelligent automation, digital couture
- Hybrid Intelligence: Co-creating with machines
- Nano to Neural: Smart fabrics & intelligent worlds
- Digital Couture & Spatial Computing
- Robotics for Humanity
- The Creative Algorithm: AI as co-designer

SUB-THEME 3 : SOCIAL IMAGINATION, INCLUSION & ETHICAL DESIGN INNOVATION

- Focus: Belonging, equity, accessibility, design justice
- Designing Belonging for all communities
- Compassionate Innovation & Ethics
- Universal Design 3.0
- Design for the Margins
- Empathy Engines for transformation



SUB-THEMES



**Future Fashion, Living Systems
& Sensory Materiality**



**Fashion Intelligent Technologies,
Hybrid Craft & Digital Futures**



**Social Imagination, Inclusion
& Ethical Design Innovation**



Contents



Future Fashion, Living Systems & Sensory Materiality

- 20 **Can Sustainability Exist in an Unsustainable Context?
Exploring the Perceived Barriers to Sustainable
Fashion Consumption among Generation Z and
Generation X Consumers in Serbia**
Anja Petrovic
- 22 **Extending Fashion Design Intelligence Across the
Wardrobe Lifecycle: An AI-Driven Framework for
Inclusive and Sustainable Styling**
Leechita Gopalakrishnan
- 23 **Regenerative Material Pathways: Circular Design
Lessons from Textile Recycling Systems in Australia,
USA and Sweden**
Akshita Jain Madan, G. Krishnaraj
- 24 **A Comparative Study to Evaluate the Effect of
Lightweight Scrubs Versus Traditional Uniform Fabrics
on Perceived Exhaustion Among Staff Nurses Working
at Selected Hospitals of Varanasi**
Shilpa Kashyap, M. Maheswary
- 25 **The Role of De-centralised Entrepreneurial Skills for
Small Scale Brands**
Zeal Mehta
- 26 **From Damage to Transformation: Living fabrics for
future lifestyle**
Linciya J
- 27 **Transforming Agro-Waste into Performance Textiles:
Exploring Pigeon Pea Fiber for Sustainable
Sportswear for Shoe Linings and Headgear**
Akanksha, G. Krishnaraj

- 28 **Effects of Store Atmosphere on Sales performance in Women's Retail Stores using Stimulus - Organism - Response (S-O-R) Approach**
Swetha Jayalakshmi J, Mariyam Adnan
- 29 **Emotive Design: Wearable & Spatial Storytelling**
Poojana A B
- 30 **A Study of Conductive Ink-Based Grounding Sheets as an Alternative to Woven Conductive Textiles**
Hrishabh Sonu
- 31 **Reimagining Mass-Distributed Marathon Apparel Through Bio-Based, Single-Use Performance Textiles**
Jaison Rakesh, Oviya Yuvashree U
- 32 **The Thûl as a Design Artefact Shaping Emotional Experience in Contemporary Mizo Living**
Felnunmoi Gangte, Sohna
- 33 **Sustainable Fashion & Lifestyle Accessories**
Nivetha Palanisamy, Amrita, Vasu Prakasam
- 35 **Biophilic Design as a strategy for Sustainable and Ethical Fashion**
Raja Balasaraswathi S, R. Rathinamoorthy
- 36 **Experiencing Art and Nature: Perspectives on Textile Engineering and Fashion Curation**
Vaishnavi Kambadur, Mamatha GPK
- 37 **Understanding Smart Clothing Design Needs of Gen Z in India using the Functional Expressive Aesthetic (FEA) Framework**
Biniya Arul Jothi, Reshmi Munshi, Kriti Srivastava
- 38 **Reimagine Wool - An Acoustic Solution**
Heer Modi, Shubhangi Yadav, Nupur Chopra
- 39 **Investigative study to understand if Kala Cotton has been adopted by the home textile segment as much as it is popular in apparel fashion.**
Rhiya Oberoi, Rakhi Wahee Pratap

- 40 **From Household Waste to Design Material: Exploring Coconut Shell and Tannic Acid in Sustainable Craft and Jewellery Practices**
Ananya Rao B
- 41 **Regenerative Futures: Circular Aesthetics in Fabrics, Fashion & Built Environments**
Jeeva Shree Karunanithi
- 42 **Beyond Inputs: Rethinking Material Awareness in Structured Fashion Production**
Punya Chauhan
- 43 **Decolonising Fashion Ethics: Social media as a Site of Cultural Accountability and Design Responsibility**
Thanusha Srinivasan, Aayushi Badhwar, Rinika Rahul Shinde, Sasirekha A



Fashion intelligent technologies, Hybrid craft & Digital Futures

- 47 **In Change: Textile Making as a Living System of Embodied Experience**
Anvi Bhatnagar, Archit Bhatnagar
- 48 **Artisan Studio: Voice-First Digital Platform for Preserving Silk Craft Heritage through Inclusive and Ethical Design Innovation**
Gunalan Venkatesan
- 49 **Regenerative Futures: Circular Aesthetics in Fabrics, Fashion & Built Environments – Regeneration across clothing, interiors, and materials**
Amirthavarshini M, Sasmitha M
- 50 **Tactile Landscapes: A Design led exploration of Interior Textiles using 3D printing**
Uthra S Ganesh, G Krishnaraj
- 51 **Nano to Neural: Biomimetic Thermo-Responsive Camouflage Textiles for Intelligent Environmental Illusion**
Anneasa Manna
- 52 **Co-Creating with Machines: A Framework for Responsible AI Integration in Design Practice**
Aayushi Jaiswal, Abhay Kumar
- 53 **Analysing Visual-First XR Exhibition Design through Distal Attribution and proposing a Multisensory Conceptual Framework**
K K Gayathri, Shimona Martin



Social Imagination, Inclusion & Ethical Design Innovation

- 57 **Core Radiance by Sephora: Designing a Dual-Format Beauty-Wellness Product Through Strategic Licensing**
Amritha Christy, Maitreyee Bhagwate, Maya Wissak, Prabhjot Kaur
- 58 **Designing from the Margins: Youth Artisan-Led Traditional Costume Design Practice**
K.P.N Bhagya, P.V.M. Karunaratne, G.M. Ranathunga, H.R.A.T. Ranaweera
- 59 **Collective Imagination in Indian Craft Ecosystems**
Lalitha Alwan, Francesco Mazzarella
- 60 **Bio-Based Functional Textiles for Circular Fashion and Living Systems**
Mahalakshmi Subramanian, Mikuláš Hurta
- 61 **Mapping Public Opinion on Urban Cleanliness and Civic Engagement in Urban India for guiding Design-Centric Solutions**
Manish Joshi, Andreas Savvides
- 62 **Piezoelectric Sensing Technology in Wearable Textiles**
Aliya Raoof, Pravin P Chavan
- 63 **Thermal Comfort and Youth Wellbeing: A User-Centric Evaluation of Heat-Based Menstrual Care for Primary Dysmenorrhea**
Ria Jeej, Rimsha Zaidi
- 64 **The Role of Empathy in Designing Cohesive Cognitive Learning Spaces**
Subhasmita Brahma, Anwita Hazra
- 65 **Designing Belonging in Informal Thrift Ecosystems: A Systems Study of Sarojini Nagar Market, New Delhi**
Yogesh, Vishu Arora

- 66 **The Yardstick of Design understanding and its interpretation by the Durrie Weavers of the Raipur Rani Cluster: A Case Study**
Devesh Mishra, Rakhi Wahee Pratap
- 67 **Reimagining Fashion Retail through Experiential Customisation: An Ethical and Inclusive Design Approach**
Akshaya Manoj M P, Sonam Sahu, Sonam Sahoo, Balasubramanian Sambasivam, L.K.Das, B. K. Chakravarthy
- 68 **Designing for the Elderly: Integrating Cognitive Ergonomics and Universal Design to Enhance Autonomy in an Aging Population**
Hemangi Chaturvedi, Mohit Kumar, Siddharth
- 69 **Move Out and Play! Designing Games to Stimulate Movement and Engagement in Students**
Vayuna Pandey, Shrishti, Niharika Bhatt, Anjali Rana, Varnika Baveja, Alka Rawat
- 70 **Rooted Tradition and Sustainable Weave Practices of The Tangkhul Tribe of Manipur**
Worsochon Kasar

Poster abstracts

- 75 **Living Intelligence: When Responsive Fashion Meets Smart Technology**
Harish P
- 76 **Reframing Textile Recycling at the Fabric Level: A Craft-Led Perspective on Heterogeneous Textile Waste**
Maitreyee Datar
- 77 **Transforming Knitwear Textile Industry Waste into Sustainable Textile Products- A Circular Economy Approach**
Sandeep Kidile, Mohini Mahajan, Kashmira Karande, Akanksha Nautiyal
- 78 **Regenerative Future: Circular Aesthetics in Fabrics, Fashion & built Environments**
Yashini N
- 79 **3D Printing: A Regenerative Approach to Fashion Embellishment through Biodegradable Button Systems**
Sakthi Sree B
- 80 **Designing with Living Materials for a Circular and Sensory Future**
Sri Mathi A R, Swathi R
- 82 **The Creative Algorithm: Human – AI Co-Creation in Data-Driven Fashion Design**
Mohammed Saqib Khan, Abdullah Najeeb
- 84 **Designing Responsible Fashion Futures Ethical Design Innovation and Circular Practices against Fast Fashion**
Anshu Kumari
- 85 **Overlooked Wallets: Financial Literacy and the Economic Empowerment of Women in Mumbai's Domestic Workforce**
Aarya Mundle, Archana Venkatachalam, Zoya Charania, Ashish Yadav

Poster abstracts

- 86 **Designing Cultural Accountability: REFRAME as a Systemic Intervention for Transgender Inclusion in Indian Cinema**
Osho Jain, T. Moasunep Jamir
- 87 **Last Bus Home: A Phenomenological Study of Gamified Social Bonding in First year students'**
Ann Treasa Joseph, Rikimi Madhukailly, Amit Deshmukh
- 88 **Designing Belonging — Inclusive Fashion, Sustainable Innovation and Cultural Heritage in Contemporary Design**
Anu Singh
- 89 **Rethinking the Front Row: Ergonomic and Inclusive Strategies for Cinema Seating Design**
Anshi Singh, Ghanishtha Pahwa
- 90 **Designing Makerspaces as Learning Ecosystems: Integrating Craft, Technology and Youth Innovation in India**
Akshara Karthi
- 91 **Designing Sensory Inclusion in Intelligent Public Systems: Extending Universal Design for AI-Mediated Environments in India**
Vidhi Bhabra
- 92 **Dressing to Communicate: The Role of Cross-Dressing in Identity and Self-Expression**
Shreya Dighe
- 93 **Rehabilitation of Slum Artisans through Livelihood and Cultural Continuity: A Case of Kathputli Nagar, Jaipur**
Deepa Borawar, Gireendra Kumar
- 94 **Fashion, Lifestyle Choices and Social Status in Urban Chennai: An Analysis through Veblen's Theory of Conspicuous Consumption**
Ureka R



Future Fashion, Living Systems & Sensory Materiality



SUB-THEME 1 : FUTURE FASHION, LIVING SYSTEMS & SENSORY MATERIALITY

Focus: Materials, bodies, habitats, emotions, lifestyle, adaptive design

Living Systems: Responsive materials & spaces

Human-Experience Ecosystem: Wellbeing through design

Regenerate Futures: Circular aesthetics

Emove Design: Wearable & spatial storytelling **Beyond Surfaces:** Bio-fabrics & hybrid spaces

Paper ID: 54

Can Sustainability Exist in an Unsustainable Context? Exploring the Perceived Barriers to Sustainable Fashion Consumption among Generation Z and Generation X consumers in Serbia

Anja Petrović

London College of Fashion, University of the Arts London, United Kingdom

Keywords: Knowledge barriers, post-socialist context, pro-environmental attitudes, Serbia, socio-cultural factors, sustainability marketing, sustainable fashion consumption, systemic barriers.

The global fashion industry is among the most environmentally damaging and socially exploitative sectors. While sustainable fashion consumption has received extensive scholarly attention in Western contexts, research in post-socialist, transitional contexts remain scarce. Serbia presents a particularly interesting case for studying sustainable fashion consumption, as the country is not only shaped by a turbulent political and economic history, a fragmented domestic textile industry, and weak environmental regulations, but it is also largely under researched. Understanding sustainable fashion consumption in this context is critical, as systemic constraints may fundamentally limit both the formation and expression of pro-environmental attitudes and behaviours. Thus, the purpose of this study is to identify and critically examine the key barriers that hinder the adoption of sustainable fashion consumption among Generation Z and Generation X consumers in Serbia, highlighting how structural, cultural, and knowledge-based factors interact to sustain the attitude-behaviour gap.

Adopting an interpretivist philosophy and an inductive research approach, this study employed a mono-method qualitative design. Ten semi-structured interviews were conducted with Serbian consumers from Generations X and Z. Data analysis followed the Gioia method of thematic analysis, yielding three overarching categories of findings. The analysis revealed three overarching barriers to sustainable fashion consumption: systemic barriers, lack of knowledge and socio-cultural barriers. Systemic barriers included weak institutional support, lack of textile waste management, limited recycling infrastructure, economic insecurity, and low institutional trust. Lack of knowledge referred to minimal sustainability awareness, poor sustainability education, and limited visibility of sustainability marketing or communication. Lastly, socio-cultural barriers included status-driven, trend-oriented consumption, stigma associated with second-hand clothing, and a post-socialist consumerist culture shaped by scarcity and, later, overconsumption. These findings demonstrated that external and structural factors outweighed internal motivations, making sustainable fashion consumption difficult to achieve without systemic change.

The study filled a significant gap in the literature on sustainable fashion consumption in a previously under researched context by identifying three perceived overarching external barriers to its adoption. It contributes theoretically by demonstrating how systemic, knowledge-related, and socio-cultural constraints interact to shape the pro-environmental attitude and behaviours, and it offers practical value by informing policy development, sustainability education, and brand strategies for both domestic and international fashion companies.

Paper ID: 164

Extending Fashion Design Intelligence Across the Wardrobe Lifecycle: An AI-Driven Prototype for Inclusive and Sustainable Styling

Leechita Gopalakrishnan

Data Science: Transdisciplinary School, University of Technology, Sydney, Australia

Keywords: Artificial Intelligence; Fashion Design Intelligence; Wardrobe Optimisation; Body Inclusivity; Sustainable Styling; Hybrid Intelligence.

Intelligence in fashion design, which incorporates the colour harmony, the logic of silhouette and body proportions, the behaviour of fabrics, the emotional intent, and the contextual relevance is encoded into the garment production, and is rarely maintained in the everyday wardrobe styling. Consequently, users often take disjointed outfit decisions that do not make use of clothes and support unsustainable consumption behaviors. The current AI-driven fashion solutions mostly focus on trend prediction, visual recommendations or similarity, and tend to operate as black-box systems that do not implement design-driven arguments and body plurality.

The following paper discusses a design-led, hybrid intelligence prototype that realises a part of a larger fashion design intelligence concept via a working wardrobe analysis engine. The prototype combines skin-under-tone estimation through computer-vision, biometric body-shape analysis, rule-based outfit scoring and attribute-modelling with a wardrobe, to produce an occasion-, season- as well as body-appropriate outfits out of the current wardrobe of a user. Garments are modeled with in-persistent design-configurations such as category, season, situation, body suitability, dominant colour, colour temperature, and allow interpretable design conscious optimisation of outfits. A harmony score encoding encoder captures design and contextual limitations like seasonality, professional and casual context, body shape compatibility and compatibility between skin undertone, colour temperature and emotional objective.

An implementation in Python, which shows how AI can become an opaque stylistic assistant, makes biometric analysis, visual undertone diagnostic, wardrobe-based recommendations and gap-oriented shopping suggestions depending on the body shape and undertone of the user. Although the further knowledge elements, like sketch-to-digital workflows, emotion-to-design granular mapping, accessory logic, and purchase optimisation sustainability aligned, are yet to be developed, this prototype confirms that it is possible to implement fashion design intelligence in the context of daily styling decisions.

Paper ID: 68

Regenerative Material Pathways: Circular Design Lessons from Textile Recycling Systems in Australia, the USA, and Sweden

Akshita Jain Madan¹, G. Krishnaraj²

¹Store Manager, Kikki.K, Brisbane, Australia

²Associate Professor, Textile Design, National Institute of Fashion Technology (NIFT), Chennai, India

Keywords: Australia, Circular Design, Lifecycle Analysis, Sustainable Materials, Textile Recycling.

An alarming bell has been ringing over the world for quite a while due to its infamous textile waste, especially blended fibres like polyester and cotton. It has been posing environmental concerns and resource challenges lately. Australia is now at a pedestal not only for its gradual high fashion consumption, but also for its innovative recycling solutions and emerging circular design initiatives. Designers and the major stakeholders shall introspect and make sustainable practices an integral part of their creative process by understanding these innovations.

This study throws light on the circular design patterns from three textile recycling leaders, BlockTexx (Australia), Ambercycle (USA), and Renewcell (Sweden). It highlights how technologies and processes can be infused into product design and production lifecycles with textile recycling as an outcome. These organisations have common ground within circular design principles but focus on different areas, such as end-markets for recycled fibres within Australia (BlockTexx), technology for polymer regeneration (Ambercycle), or cellulose processing at scale (Renewcell).

A qualitative case-study-based approach consisting of expert interviews, process and lifecycle mapping, secondary research, and comparison has been used. The study thoroughly delivers insights into the present situation and prospects for a healthier future for the ecosystem. Case studies acknowledge the problems at different levels of the process and highlight the following:

- Effective recycling requires materials to be simple and easily traced.
- Stretch textiles were identified as a large outstanding issue.
- Circularity must begin at the design phase, rather than just at disposal.
- Creating more does not solve oversupply. Overproduction and over consumption add to resource distress. The system must aim to close the loop.

This research provides a framework for all the stakeholders, especially, young designers, students, upcoming brands, and emerging innovators to understand the importance of circular design ethics for businesses in the fashion industry. It suggests actionable ways to incorporate recycled fibres into their production practices mindfully and provides insights on the leading international textile-to-textile recycling companies for best practices that marry sustainability and commercial success, paving the way for innovative and regenerative textile industry futures.

Paper ID: 113

A Comparative Study to Evaluate the Effect of Lightweight Scrubs versus Traditional Uniform Fabrics on Perceived Exhaustion among Staff Nurses Working in Selected Hospitals of Varanasi

Shilpa¹, M. Maheswary²

^{1,2}Department of Nursing (HIMS College of Nursing and Paramedical Sciences, Affiliated to Atal Bihari Vajpayee Medical University, U.P.), Varanasi, India.

Keywords: Fashion ergonomics, Lightweight scrubs, Nurse fatigue, Perceived exhaustion, Uniform comfort.

Nursing is a physically demanding profession that often leads to fatigue and perceived exhaustion due to prolonged standing, patient handling, and continuous clinical duties. While workload-related factors have been widely studied, limited attention has been given to ergonomic factors such as the comfort and fabric of nursing uniforms. Traditional uniforms made from thicker fabrics may contribute to heat accumulation and discomfort, whereas lightweight scrubs are designed to be breathable and flexible.

This study aimed to compare the effect of lightweight scrubs and traditional uniform fabrics on perceived exhaustion among staff nurses working in selected hospitals of Varanasi. A quantitative comparative research design was adopted, and 60 staff nurses were selected using non-probability purposive sampling. Data were collected using a structured self-perceived exhaustion scale along with socio-demographic variables.

The findings revealed that nurses wearing lightweight scrubs reported lower perceived exhaustion (Mean = 41.30 ± 8.55) compared to those wearing traditional uniforms (Mean = 57.27 ± 11.49). The unpaired t-test showed a statistically significant difference between the groups ($t = 6.106, p < 0.05$).

The study concludes that lightweight and breathable scrub fabrics may help reduce perceived exhaustion among nurses. Improving the ergonomic design of nursing uniforms could enhance nurses' comfort and work efficiency in healthcare settings.

Paper ID: 185

The Role of De-centralised Entrepreneurial Skills for Small Scale Brands

Zeal Mehta

Fashion Design Department, GLS Institute of Design, GLS University, Ahmedabad, India

Keywords: Collective, Entrepreneurial skills, Fashion brands, Inclusive, Team members

Entrepreneurial skills play a crucial role in transforming creative ideas into successful fashionbrands. Beyond design expertise, these skills enable individuals to identify opportunities, make informed decisions, manage resources efficiently, and respond proactively to market changes. In the context of fashion, particularly within micro and small-scale brands, entrepreneurial skills empower designers and team members to balance creativity with commercial viability while embedding inclusive and community-centric values into their business models. These skills are divided into 3 major skills sets: 1. Business management; 2. Marketing, Branding & PR and 3.

Industry Technical skills. When shared across the team, these skills foster collaboration, reduce dependency on a single individual, and contribute to long-term growth. The study is conducted with small scale fashion brands where the owners and the team are the primary respondents. The findings highlight the importance of integrating entrepreneurial skill sets to not only the owner of the business but also the team members to grow in a highly competitive and rapidly evolving fashion industry. Majority of all the skills should be possessed by the owner and his/her team. This will in turn reduce the load from the owner/entrepreneur. It builds a brand which is not around one person but is inclusive in roles and will have greater opportunities to grow.

Paper ID: 89

From Damage to Transformation: Living fabrics for future lifestyle

Linciya J

Department of Fashion Technology, PSG College of Technology, Coimbatore, India.

Keywords: Living Fabrics; Sustainable Textiles; Bio-fabrication; Circular Fashion; Regenerative Design; Textile Waste Reduction; Future Lifestyle Materials

The textile and fashion industry faces serious sustainability challenges. These stem from high resource use, environmental pollution, and the growing amount of textile waste caused by short product lifecycles. Traditional fabrics are usually made to be static materials that wear out with use. They are often thrown away before they reach the end of their functional lifecycle, especially in the fast fashion system. This study looks at living fabrics, a new kind of biointegrated textile that can self-repair, regenerate, and respond to environmental changes. These fabrics may offer a transformative solution for future lifestyle applications.

The research takes a qualitative and exploratory approach, backed by a systematic review of peer-reviewed journals, conference papers, and reliable industry reports related to sustainable textiles, bio-fabrication, and living materials. A comparative analysis evaluated conventional textiles and living fabrics based on key factors like durability, environmental impact, selfhealing ability, biodegradability, and lifecycle performance. The study also examined selected experimental case studies of living fabric applications to understand material behaviour, feasibility, and potential challenges in implementation. Concepts from bio-design, regenerative design, and circular economy frameworks were used to interpret findings and support sustainable design strategies.

The results show that living fabrics have significant advantages. They can extend the lifespan of textiles, reduce material damage, and allow for natural biodegradation. This contributes to less textile waste and a lower environmental impact. These materials also have promising uses in fashion, healthcare, and interior lifestyle products. However, obstacles like high production costs, limited scalability, technological limitations, and consumer acceptance are major barriers to widespread adoption. The study suggests gradually integrating living fabrics through collaboration across disciplines, more research in bio-fabrication technologies, and pilot-scale implementation. Overall, living fabrics offer a hopeful pathway to more sustainable, regenerative, and future-focused textile systems.

Paper ID: 64

Transforming Agro-Waste into Performance Textiles Exploring Pigeon Pea Fiber for Sustainable Sportswear for Shoe Linings and Headgear

Akanksha¹, G. Krishnaraj²

¹B.des in Textile Design Department National Institute of Fashion Technology (NIFT) Chennai Chennai,India

²Associate Professor & Project-In-Charge Textile Design Department, National Institute of Fashion Technology (NIFT) Chennai Chennai,India

Keywords: Pigeon pea fibre, Agro-waste textiles, Sustainable materials, Sportswear textiles, Moisture management, absorbency, Wicking, Thermal conductivity, Circular economy

The study explores the sustainable potential of pigeon pea (*Cajanus cajan*) stem fibers—an agricultural by-product—when blended with cotton to produce eco-functional woven fabrics suitable for sportswear applications such as shoe linings and headgear. Conventional sports materials like polyester and EVA foams provide functionality but lack biodegradability, resulting in environmental impact and user discomfort due to poor breathability. This research aims to transform agricultural waste into a value-added textile resource through experimental fiber extraction, fabric development, and performance analysis.

Fibers were extracted through water retting, stripping, washing, and manual processing. Yarns were spun using a hand charkha and woven into plain, basket, and honeycomb structures. The developed samples were tested for absorbency, wicking rate, and thermal conductivity using the drop test, capillary rise method, and C-Therm Trident Analyzer, respectively. Results indicated that the basket weave exhibited the highest absorbency (0.54 s) and balanced wicking (0.017 cm/s), making it ideal for sports shoe lining applications. The honeycomb weave, with the lowest thermal conductivity (0.037 W/m·K), demonstrated superior insulation suitable for headgear and padding. These findings reveal that structural design and fiber composition significantly affect heat regulation and moisture management in textiles.

The study establishes pigeon pea fiber as a functional and sustainable alternative to synthetic sportswear materials. By repurposing agricultural residue, it contributes to circular economy principles, eco-friendly innovation, and the advancement of biodegradable, high-performance textile solutions.

Paper ID: 57

Effects of Store Atmosphere on Sales performance in Women's Retail Stores using Stimulus–Organism–Response (S–O–R) Approach

Swetha Jayalakshmi J¹, Mariyam Adnan²

^{1,2}Department of Apparel and Fashion Design PSG College of Technology, Coimbatore, India

Keywords: Experience, Atmospherics, Consumer behaviour, Emotion, Women's wear

Women's wear apparel stores have evolved to experience-driven shopping from product driven selling. Women carry sensory and emotional experience while shopping. Store atmospherics plays a major role in affecting the shopping behaviour of women. It is a powerful tool to increase sales as it comprises visual, social, olfactory and auditory cues that influence consumer behaviour. The store atmospheric cues evoke emotional states like pleasure, arousal and dominance of consumers which there by influences the purchase decision. This study Stimulus–Organism–Response (S–O–R) framework, which uses store atmospheric elements (stimuli) that influences consumer behaviour (organism) thereby affecting the sales (response). A quantitative, cross-sectional research design was employed of 140 respondents with structured questionnaire using a 5-point Likert scale. Statistical analysis was done to analyse the influence of store atmospheric cues on consumer's purchase behaviour and sales performance. Exploratory factor analysis was performed in which it is observed that the store atmospheric cues have strong influence on sales performance and consumer behaviour. To check the suitability of factors, Kaiser-Meyer-Olkin test (KMO) where the overall Measure of Sampling Adequacy (MSA) is 0.729 indicating the suitability for factor analysis and Bartlett's Test value shows $p < 0.001$ showing high correlation among variables. Exploratory factor analysis with factor loadings revealed three factors in which factor 1 showed 42 % of variance. This study proves that store atmospheric cues have a strong influence of sales. During crowded sales or festival offers, retailers can concentrate more of the atmospheric cues to attract consumers inside the store and make their shopping experience better.

Paper ID: 122

Emotive Design: Wearable and Spatial Storytelling

Poojana A.B

Department of Fashion Technology, PSG College of Technology Coimbatore, Tamil Nadu.

Keywords: Emotive Design; Human-Centered Design; Sensory Materiality; Spatial Storytelling; Wearable Design; Experiential Design

In contemporary design practice, the relationship between people, the objects they use, and the environments they inhabit is becoming increasingly complex. While fashion design and spatial design both strongly influence human experiences, they are often developed independently. Clothing is often designed primarily to follow aesthetic trends and market demands, whereas spatial environments are frequently designed with an emphasis on functionality and efficiency. This separation limits the potential for design to create emotionally meaningful and immersive experiences. This research explores the concept of emotive design as an approach that connects wearable design and spatial environments through storytelling and sensory engagement. Emotive design focuses on creating designs that evoke emotional responses and strengthen the relationship users and their surroundings. The study investigates how garments and spatial environments can function as interconnected storytelling systems using elements such as materials, textures, lighting, symbolic motifs, and spatial transitions.

The research adopts a qualitative and exploratory methodology based on secondary research and conceptual analysis. Academic literature related to emotional design, human-centered design, sensory architecture, and experiential environments was reviewed to understand how emotional engagement can be embedded into design practices. A systems-thinking approach was used to analyse the interaction between wearable elements and spatial environments.

The findings indicate that integrating emotive design strategies into both garments and spatial environments can significantly enhance user engagement and psychological connection. Sensory materials, atmospheric lighting, tactile surfaces, and narrative design elements help create immersive environments that communicate stories and evoke meaningful experiences. The study highlights the importance of interdisciplinary collaboration between fashion designers, architects, and creative professionals to develop future design systems that prioritise emotional wellbeing, identity expression, and human-centered innovation. This study proposes a conceptual framework that illustrates how wearable design and spatial environments interact through sensory and atmospheric elements to influence human emotional engagement

Paper ID: 171

A Study of Conductive Ink-Based Grounding Sheets as an Alternative to Woven Conductive Textiles

Hrishabh Sonu

Department of Textile design, National Institute of Design, Ahmedabad, India

Keywords: Conductive textiles; Grounding sheet; Graphene ink; Screen printing; Functional bedding

Grounding or earthing textiles are designed to establish electrical continuity between the human body and the Earth through conductive materials embedded in everyday products such as mats and bedsheets. The majority of commercially available grounding sheets depend on woven silver-coated yarns integrated into cotton fabrics. Although these systems are effective in providing conductivity, they are associated with notable limitations, including elevated material costs, structural stiffness, oxidation-related conductivity degradation over time, and restricted adaptability to diverse design formats.

This paper investigates an alternative fabrication strategy in which conductivity is introduced through screen-printed graphene-based ink applied directly onto textile substrates. Rather than embedding conductive yarns within the weave structure, conductive pathways are established through printed grid configurations that preserve fabric softness, drape, and flexibility. Two cotton substrates were printed using controlled mesh variations to examine ink deposition behavior, electrical continuity, wash durability, and tactile response. Electrical continuity was validated through multimeter testing conducted across multiple points on the printed surface, and wash durability was evaluated under standardized laundering conditions representative of regular bedding use.

Results indicate that screen-printed conductive systems can achieve measurable electrical continuity while maintaining the comfort characteristics expected in bedding textiles. Mesh count was found to be a critical variable influencing both conductivity and surface hand feel. The findings suggest that printing methods offer a scalable, design-integrated, and potentially more sustainable alternative to woven conductive yarn systems in grounding sheet applications. This research contributes to an emerging body of knowledge at the intersection of functional textiles, printed electronics, and wellness-oriented material design.

Paper ID: 116

Reimagining Mass-Distributed Marathon Apparel Through Bio-Based, Single-Use Performance Textiles

Jaison Rakesh R¹, Oviya Yuvashree U²

^{1,2}Department of Fashion Designing, SRM Institute of Science and Technology, Ramapuram, Chennai, Tamil Nadu 600089, India.

Keywords: Bio-Based Textiles; PLA Nonwovens; Sustainable Sportswear; Marathon Apparel; Single-Use Garments; Textile Waste Reduction

Mass-participation marathons distribute large quantities of polyester T-shirts annually, which are often worn only once or stored, generating substantial textile waste and environmental impact. While polyester offers durability and moisture management, its persistence in landfills and contribution to micro plastic pollution highlight a misalignment between material properties and actual usage. This research proposes PLA-based biodegradable nonwoven fabrics as a sustainable alternative for single-use marathon apparel. Ultra-lightweight and breathable, these fabrics optimize thermal regulation, sweat evaporation, and runner comfort, while intentionally limiting wash durability to match event-specific use. Industrial compostability ensures environmentally responsible end-of-life management, and scalable production methods offer cost-effective feasibility. By aligning garment performance with real-world functional requirements, this study presents a paradigm shift in mass-distributed sportswear, emphasizing material intentionality, lifecycle-conscious design, and ecological responsibility. PLA nonwovens provide a practical model for transforming disposable sports apparel into a regenerative, high-performance solution, demonstrating how future fashion systems can balance human experience,

Paper ID: 80

The Thûl as a Design Artifact Shaping Emotional Experience in Contemporary Mizo Living

Felnunmoi Gangte¹, Sohna²

¹Assistant Professor, Foundation Studies, Unitedworld Institute of Design- NCR, GD Goenka University

²PhD Scholar, IDC School of Design, Indian Institute of Technology Bombay Mumbai, Maharashtra.

Keywords: Bamboo Baskets, Cultural Identity, Emotive Spaces, Interior Space, Material Culture, Thûl

The Thûl, a traditional bamboo storage basket of the Mizo community in Northeast India, embodies a convergence of material knowledge, cultural identity, and emotional meaning. Historically used for storing grains and household textiles, the basket is valued for its durability, ventilation, and pest-resistant construction. With the introduction of industrial storage alternatives, its functional role declined; however, the Thûl did not disappear. Instead, it has re-emerged as a symbolic and spatial artefact within contemporary Mizo homes, ceremonies, and branding practices.

This paper examines the Thûl through the lens of human experience, focusing on how objects and materials shape emotional and sensory wellbeing within domestic and cultural spaces. Drawing on design anthropology and material culture studies, the research employs spatial analysis of interiors, semi-structured interviews and object and material analysis to document how the Thûl is perceived, displayed, and remembered. Findings indicate that the basket operates as an emotional anchor, evoking memories of home, childhood, and intergenerational continuity. Its placement within living spaces contributes to feelings of warmth, hospitality, and cultural rootedness, while inherited and bridal Thûl function as carriers of emotional reassurance during life transitions.

The study also highlights how the present generation reinterprets the Thûl through interior styling, symbolic branding, and miniature forms, bridging heritage with contemporary lifestyle practices. The sensory qualities of bamboo— its texture, warmth, and organic visual rhythm, further reinforces its role as a material of calmness and grounding.

By reframing the Thûl as an emotional–spatial design element rather than solely a utilitarian object, this research demonstrates how traditional crafts can inform future design explorations focused on wellbeing, cultural continuity, and experience-driven innovation.

Paper ID: 115

Sustainable Fashion & Lifestyle Accessories

Nivetha Palanisamy¹, Amrita², Vasu Prakasam³

¹Intern, Textile Design & Weaving Department, Weavers' Service Centre, Office of the Development Commissioner (Handlooms), Ministry of Textiles, Government of India Kanchipuram, India.

²Textile Designer, Textile Design Department Weavers' Service Centre, Office of the Development Commissioner (Handlooms), Ministry of Textiles, Government of India Kanchipuram, India.

³Deputy Director / Head of Office Weavers' Service Centre, Office of the Development Commissioner

Keywords: Waste-to-Wealth, Circular Economy, Ecofriendly textiles, Resource Management, Sustainable fashion, Handlooms & Handicrafts Sector, Plant-Based Fibres Eco-Friendly Textiles, Rural Livelihoods

This study addresses the critical environmental challenge of resource underutilization by investigating a "waste-to-wealth" framework. Currently, a significant volume of natural resources are discarded after a single use, leading to environmental accumulation and a direct threat to sustainability. The primary objective of this research is to identify innovative ways to repurpose these discarded materials into high-value end products, specifically targeting the fashion and home accessory markets. The global textile and fashion industry is undergoing significant transformation due to growing environmental concerns, increasing resource depletion, and the accumulation of textile waste. Sustainable production methods have therefore become a critical priority for researchers, policymakers, and industry stakeholders. The present study titled "Sustainable Fashion & Lifestyle Accessories" investigates the potential of converting plant-based waste materials into value-added fashion and lifestyle products using traditional handloom techniques. The research focuses on natural resources such as Calotropis (Milkweed), palm fibres, Moringa (drumstick plant fibres), and organic brown cotton blended with cotton, which are processed and woven into home furnishing products including place mats, table runners, and curtains. The study adopts an experimental and practice-based methodology involving fibre extraction, natural processing, handloom weaving, and product development. Emphasis is placed on low-energy production systems, minimal chemical usage, and the integration of traditional craftsmanship. The results demonstrate that fibres extracted from these plant sources possess adequate tensile strength, flexibility, and aesthetic appeal suitable for textile applications. The developed products show promising durability and eco-friendly characteristics, aligning with the principles of circular economy and sustainable design. Additionally, the initiative contributes to rural employment generation and preservation of traditional weaving skills. The findings suggest that sustainable fashion practices integrating waste-based fibres and artisanal craftsmanship can significantly contribute to environmental conservation, socio-economic empowerment, and the development of innovative eco-friendly textile products.

The research employs a systematic circular economy approach to material processing. The methodology for natural waste involves several key stages:

- Preparation: Raw waste materials are soaked and dried to stabilize the fibers.
- Extraction: The materials are slit into precise strips or processed to extract core fibers.
- Fabrication: These fibers are woven using traditional handlooms or handcrafted into durable, utility-based textiles.
- Conversion: The resulting woven materials are designed into functional consumer goods such as wallets, mats, and various home accessories.

The study highlights the successful conversion of plant-based waste from species like Calotrope (milkweed), Moringa, Palm Fibre & Brown Cotton into high-quality mats, carpets and curtain. Ultimately, the findings suggest that the transition from a linear "disposable" model to a circular "utilization" model is both environmentally necessary and economically viable.

Paper ID: 27

Biophilic Design as a strategy for Sustainable and Ethical Fashion

S. Raja Balasaraswathi¹, R. Rathinamoorthy²

^{1,2}VIT Fashion Institute of Technology, Vellore Institute of Technology, Chennai, India.

Keywords: Biophilic Design, Sustainability, Eco-Design, Nature-Inspired, Living System

Biophilic design is the concept of incorporating nature's principles and features with the ultimate aim of enhancing the well-being of individuals. The concept is most commonly associated with architecture or interior designing as emerged with the idea of incorporating natural elements in the built environment. However, the scope of applying the concept is not limited. In that aspect, fashion is one such field where the scope of implementing the concept is highly possible. Apart from the aesthetics (nature-inspired patterns, textures, colours), biophilic design can also contribute to the sustainability aspects in terms of using eco-friendly raw materials, locally sourced materials, patterns with minimal wastage, compostable packing, etc. Though there are many research analyses on sustainability and nature-inspired designs, the cohesive understanding to map biophilic design across the entire fashion lifecycle and connect it to sustainability at each stage can bring huge change. In that aspect, the paper addresses the scope of how biophilic principles can be embedded into sustainable fashion practices, from raw material sourcing to disposal. Moreover, critical role of biophilic design aspects in enhancing the emotional and psychological well-being of the individuals is also analyzed through surveys. Also, the final part of the paper explores how the integration of traditional and slow fashion techniques through biophilic designs promotes the authentic use of crafts/local materials.

Paper ID: 121

Experiencing Art and Nature: Perspectives on Textile Engineering and Fashion Curation

Vaishnavi Kambadur¹, Mamatha GPK²

¹Associate Professor, Pearl Academy- Independent Curator, Bengaluru, India.

²Associate Professor, Pearl Academy- School of Business, Bengaluru, India.

Keywords: Art, Biomimicry, Collaboration, Contemporary Textiles, Fashion, Materiality

Materials are inherently linked to the spaces they occupy, its makers and the personal memories that they evoke in their viewers. However, they are often studied through a singular perspective. This research paper attempts to chart a path to examine biomimicking and emotional qualities of recent contemporary textile art and costume practices in India that have been exhibited in exhibitions as well as fashion shows. It creates a two-part analytical framework in the form of cultural, material and technical textile considerations to understand the impact it has on exhibition making, psychology, self-expression, and perception of the audiences.

The purpose of the study is to bridge the gap and collaborate between the fields of textile engineering and art-fashion curation to ask questions such as how storytelling in contemporary art centralizes the materiality of its textile as its primary medium? How can it translate emotional properties by bringing in unconventional and conventional materials as a starting point for hand knitting, hand spinning, weaving and interlacing? Art-fashion curation borrows from liberal arts education particularly anthropology, sociology and philosophy to theorize abstract concepts whereas textile engineering relies on scientific enquiry. Therefore, a mixed methodology approach will be used, including but not limited to interpretative analysis, site visits, ethnography, and object-based research. Museum collections, capsule fashion and art collaborations, exhibitions, fashion brands, private collections, and material libraries will be studied to explore this connection between material, mimicking, and art.

Paper ID: 140

Understanding Smart Clothing Design Needs of Gen Z in India using the Functional Expressive Aesthetic (FEA) Framework

Biniya Arul Jothi¹, Reshmi Munshi², Kriti Srivastava³

^{1,2,3}Department of Design Space National Institute of Fashion Technology, Bengaluru Karnataka, India.

Keywords: Smart Clothing, Generation Z, Wearable Technology, FEA Framework, Apparel Design, User-Centred Design

The integration of fashion and digital technologies has led to the emergence of smart clothing, which embeds sensing and interactive capabilities within garments. Despite its technological potential, the adoption of smart clothing remains limited due to issues related to comfort, usability, and design integration. Much of the existing research on wearable technology focuses on device performance or user acceptance of gadgets such as fitness trackers and smartwatches, with comparatively little attention to clothing-specific design considerations. Since clothing functions not only as a technological interface but also as a medium for identity expression and aesthetic representation, design-oriented research is needed to examine smart clothing through apparel design frameworks. This study investigates the design expectations of smart clothing among Generation Z users in India using the Functional -Expressive -Aesthetic (FEA) framework. A qualitative exploratory approach was employed through semi-structured interviews with 32 Gen Z participants aged 18 to 29 living in Tier-A urban cities. The interviews explored participants' experiences with wearable technologies, their perceived limitations, and their expectations for future smart garments. The data were analysed using thematic analysis and interpreted through the functional, expressive, and aesthetic dimensions of the FEA framework. The findings indicate that many Gen Z users discontinue using wearable devices due to friction created by charging requirements, remembering to wear devices, and managing additional gadgets. Participants also noted that most of their physical activity occurs incidentally through daily routines such as commuting or walking to work or college. Functional attributes such as comfort, breathability, durability, and washability were considered essential for adoption. Expressive factors including identity representation, lifestyle compatibility, and social acceptability influenced perceptions of smart clothing, while aesthetically, participants preferred familiar silhouettes and minimalist designs with discreetly integrated technology.

The study concludes that successful smart clothing design requires balancing functional performance, expressive meaning, and aesthetic compatibility to align with users' everyday routines and fashion preferences.

Paper ID: 81

Re-imagine Wool-An Acoustic Solution

Heer Modi¹, Shubhangi Yadav², Nupur Chopra³

¹Student- Textile Design, National Institute of Fashion Technology, Gandhinagar, Gujarat.

^{2,3}Associate Professor- National Institute of Fashion Technology, Gandhinagar, Gujarat.

Keywords: Multisensory Interiors, Indigenous Indian Wool, Sustainable Interiors, Circular Design, Regenerative design, Craftled Innovation

India being world's largest producer of wool discarded about 80% of the wool due to its low value application, its high coarseness or its structure. This project explores the regenerative way to utilise this into an interior application in terms of acoustic panelling. The conventional materials used in acoustics are synthetic board or mineral forms which prompt in degrading environments. The study explores the possibility of a mono material in soundproofing wall panels with texture which enhance the visual of an interior.

This study explores 6 different swatches using traditional weaving technique of double cloth, with a variable in the weave pattern of twill, basket and plain. Felted wool and carded wool is used to fill the air pocket to provide extra sound proofing.

The testing of the project is limited due to unavailability of the testing machine, however an estimate value has been derived and the resultant value for the Noise Reduction Coefficient (NRC) reaches up to 0.55 to 0.65 which qualifies as an effective number. This experiment demonstrates a potential transformation of low graded Indian indigenous wool into an effective biodegradable and sustainable interior solution. By integrating the underutilised product into a functional design, it promotes a circular approach, a natural alternative to the synthetic materials currently dominating the acoustic market.

Paper ID: 21

Investigative Study to Understand if Kala Cotton has been Adopted by the Home Textile Segment as much as it is Popular in Apparel Fashion

Rhiya Oberoi¹, Rakhi Wahee Pratap²

^{1,2} Textile Design, National Institute of Fashion Technology, Panchkula, India.

Keywords: Indigenous, Sustainable Future, Home Textiles, Conscious Consumption

Kala cotton, one of India's only surviving indigenous varieties, is gaining renewed attention for its environmental resilience, cultural legacy, and potential to shape a more sustainable textile future. Cultivated in a few parts of Andhra, Haryana, and primarily in the dry, drought-prone landscapes of Kutch, Gujarat. Kala cotton is a short-staple, rain-fed variety that has evolved naturally over centuries. Its inherent resistance to pests and low dependency on external inputs make it an ecologically sound choice, especially in a world grappling with climate change and resource depletion.

Before being supplanted by commercial hybrid cotton, Kala cotton, which has its roots in the traditional agrarian and craft techniques of the farming people of Kutch, was an essential component of India's textile ecology. However, the fiber has seen a resurgence in recent years, especially in the field of eco-friendly fashion. In the modern clothing business, where it is praised for its texture, breathability, and rustic aesthetics, Kala cotton has been repositioned thanks in large part to designers, cooperatives, and grassroots organizations. Although the fabric has made a name for itself in conscious apparel, it is still rather uncommon in home furnishings.

This research paper aims to trace Kala cotton's evolving narrative—from its historical significance and cultivation practices to its contemporary relevance in fashion and its gradual foray into home textiles.

The study will investigate why Kala cotton has not yet gained mainstream attention in the home furnishings market, despite its handcrafted value and sustainability benefits. It will show whether designers and lifestyle companies are starting to close this gap by producing beautiful, useful, and high-quality home goods that honor cultural craftsmanship and environmental principles. With kala cotton at the nexus of sustainability, design, and agriculture, this study will shed light on how this once-underappreciated fiber can be crucial in transforming homes and wardrobes and launching a new era of thoughtful consumption based on creativity, resiliency, and legacy.

Paper ID: 112

From Household Waste to Design Material: Exploring Coconut Shell as a Bio-Composite in Sustainable Craft and Jewellery Practice

Ananya Rao B

Jewellery Designer, Chennai, India.

Keywords: Bio-composite; Coconut shell; Material Driven Design; Sustainable Jewellery; Tannic Acid

Coconut shell is generated in enormous volumes across South India - most of it discarded. This paper asks what happens when it is treated as a design material. Following a Material Driven Design (MDD) methodology (Karana et al., 2015), the study begins with physical tinkering - sawing, drilling, carving, heating, and laser cutting whole coconut shell to understand its affordances and constraints. The shell performs well under cutting and abrasive processes; it resists three-dimensional hand-working. That resistance opened a different route: ground into powder and combined with a bio-derived binder, the shell transforms into a mouldable composite paste. Agar and cornstarch were trialled first; tannic acid - sourced from Acupure - proved the effective binder, achieving dimensional stability and hardness across ten preparation and curing steps. The paste was cast in a silicone mould and applied directly onto brass, with both methods proving workable. Section thickness and open-face mould geometry were the deciding variables. A participant survey (n = 20-30) confirmed strong interest in coconut shell jewellery, particularly in combination with metal. Scrolling motifs from the Hoysala temple tradition, drawn from direct analysis of the Chennakeshava Temple at Belur, Karnataka, were translated into jewellery form and realised in the bio-composite paste. The material system - coconut shell powder processed with accessible tools and plant-derived chemistry - demonstrates genuine promise for sustainable jewellery practice.

Paper ID: 83

Regenerative Futures: Circular Aesthetics In Fabrics, Fashion & Built Environments

Jeeva Shree Karunanithi

Department of Fashion Technology, PSG College of Technology, Affiliated to Anna University, Coimbatore, India.

Keywords: Regenerative Design, Circular Economy, Circular Aesthetics, Fashion Systems, Sustainable Textiles, Built Environment

The increasing environmental challenges associated with contemporary design practices have highlighted the limitations of linear production and consumption systems in industries such as fashion, textiles, and the built environment. These systems contribute significantly to material waste, resource depletion, and ecological imbalance. While sustainable design strategies primarily focus on minimizing environmental damage, there is a growing need to adopt regenerative approaches that actively restore and enhance natural and social systems. This study explores how regenerative design principles and circular economy concepts can be integrated into fabrics, fashion systems, and built environments to create more responsible, resilient, and future-oriented design practices.

The research adopts an exploratory qualitative methodology based on literature review, case analysis, and conceptual mapping of regenerative and circular design practices across multiple disciplines. Academic studies, industry reports, and design examples related to circular economy, sustainable materials, and sensory design were examined to identify key patterns and opportunities for integration. A systems-thinking perspective was used to understand the interconnected relationships between materials, design processes, user behaviour, and environmental impact.

The findings indicate that the integration of regenerative principles with circular aesthetics can significantly improve material longevity, reduce waste generation, and encourage responsible consumption patterns. Circular aesthetics, expressed through textures, forms, and sensory experiences, strengthen user engagement and foster emotional connections with products and spaces, thereby extending their lifespan. The study also highlights the potential of interdisciplinary collaboration and youth-driven innovation in developing creative and scalable regenerative design frameworks.

Overall, the research emphasizes that combining regenerative design, circular material systems, and aesthetic engagement can transform the way fabrics, fashion, and built environments are conceived and experienced. By shifting from damage reduction to environmental restoration, regenerative futures present a holistic pathway toward sustainable development, ecological balance, and responsible lifestyle practices.

Paper ID: 75

Beyond Inputs: Rethinking Material Awareness in Fashion Production Systems

Punya Chauhan

Knitwear Design Department, National Institute of Fashion Technology, Chennai, India

Keywords: Design-to-Production Systems; Material-Centred Design; Sensory Materiality; Tacit Knowledge; Systems Thinking

Apparel production systems are engineered for speed. At that speed, something fundamental gets lost: the material itself. This study examines how contemporary apparel manufacturing engages with materials across the design-to-production chain, tracking where sensory qualities and behavioural material responses are systematically overlooked. Conducted through immersive field observation at a large-scale, high-fashion women's wear export facility in Sri Lanka, the research draws from direct exposure across design, development, sampling, and manufacturing stages. It traces exactly where material knowledge disappears as garments move through production.

The industry speaks at length about sustainable and adaptive materials. Smart fabrics, living systems, responsive textiles: the conversation is loud. Yet on the production floor, materials are still processed as fixed, controllable variables. Standardised. Moved through. This gap between material innovation in discourse and material ignorance in practice is the structural problem this study addresses.

Findings reveal that a significant body of material knowledge exists, but informally. It sits with craftsmen, technicians, and operators who physically engage with fabrics daily, making intuitive adjustments that never get documented or fed back into design decisions. Without structured material-aware checkpoints across production stages, this knowledge stays invisible. It resolves problems locally but changes nothing systemically.

Material responsiveness is not an external innovation to be added onto existing systems. It is a latent capacity already present within them, waiting to be structurally recognised. Integrating material awareness from the earliest stages of production has the potential to reduce waste, improve design-to-output consistency, and open space for genuinely adaptive fashion manufacturing.

Paper ID: 181

Decolonising Fashion Ethics: Social Media as a Site of Cultural Accountability and Design Responsibility

Thanusha S¹, Aayushi Badhwar², Rinika Rahul Shinde³, Sasirekha A⁴

^{1,4}Fashion Management Studies, National Institute of Fashion Technology, Chennai, India.

²Enterprise and Technology, School of Fashion and Textiles, RMIT University Melbourne, Australia.

³School of Fashion and Textiles, RMIT University, Melbourne, Australia.

Keywords: Decolonisation; Design Ethics; Cultural Accountability; Social Media Activism; Inclusion and Belonging; Fashion Practice

This paper examines how decolonial discourse is unfolding within and beyond traditional institutional settings, focusing specifically on social media as an emergent site of critique and resistance in the fashion and textile (F&T) industry. Drawing on a two-stage mixed qualitative methodology integrating a PRISMA-guided systematic literature review with a comparative case analysis of Instagram-mediated controversies, the study investigates three prominent incidents involving Prada's Kolhapuri chappal and Punjabi jutti appropriations and Bipty's reframing of the South Asian dupatta as a "Scandinavian Scarf." The analysis reveals a persistent disconnect between academic commitments to decolonisation and industry practice, wherein cultural symbols are extracted without attribution, collaboration, or reciprocity. Findings demonstrate that Instagram functions as a counter-public sphere, enabling marginalised communities to document heritage, demand accountability, and challenge colonial power dynamics. By situating social media as both an empirical site and a space of collective knowledge production, this study reframes decolonisation as a question of everyday design ethics and care-centred innovation within the global fashion system.

NOTE



NOTE





Fashion Intelligent Technologies, Hybrid Craft & Digital Futures



SUB-THEME 2 : FASHION INTELLIGENT TECHNOLOGIES, HYBRID CRAFT & DIGITAL FUTURES

Focus: AI, robotics, XR, intelligent automation, digital couture

Hybrid Intelligence: Co-creating with machines

Nano to Neural: Smart fabrics & intelligent worlds

Digital Couture & Spatial Computing Robotics for Humanity

The Creative Algorithm: AI as co-designer

Paper ID: 74

In Change: Textile Making as a Living System of Embodied Experience

Anvi Bhatnagar¹, Archit Bhatnagar²

¹Textiles, Royal College of Art London, United Kingdom.

²Laboratory of Structural Proteins, Institute of Biotechnology of Czech Academy of Sciences Vestec, Czech Republic.

Keywords: Craft knowledge, Embodied making, Living systems, Practice-led research, Sensory materiality

Contemporary textile production frequently prioritises efficiency, visual output, and scalability, limiting how materials are understood through time, use, and embodied engagement. Within industrial and fashion contexts, textiles are often evaluated primarily as finished surfaces rather than as processes that register interaction, movement, and care. This study investigates textile-making as an alternative mode of material inquiry by proposing textiles as living systems that register memory, transformation, and embodied experience through sustained interaction.

The research examines how hand-based textile practices can function as modes of knowledge production in which meaning emerges through repetition, bodily presence, and material engagement. Adopting a practice-led methodology, the project integrates observational colour walks, gesture studies, drawing, and material experimentation using knitting and textile painting. Materials including wool, silk, wire, and reclaimed upholstery fabrics were used to explore tension, flexibility, resistance, and transformation through iterative making processes.

The research culminated in a textile installation accompanied by a live knitting performance in which the process of making unfolded in real time. Audience responses were collected through a post-exhibition survey. Results indicate that viewers frequently interpret the work through sensory and bodily associations, responding to gesture, repetition, and material presence rather than fixed symbolic meaning. These findings suggest that textile-making can operate as an embodied form of inquiry where knowledge emerges through prolonged material interaction. By framing textile-making as a relational and evolving system, the study demonstrates how practice-led craft processes can function as forms of thinking-through-making. These findings contribute to contemporary discussions on hybrid craft practices, embodied intelligence, and sensory materiality in design research.

Paper ID: 195

Artisan Studio: Voice-First Digital Platform for Preserving Silk Craft Heritage through Inclusive and Ethical Design Innovation

Gunalan Venkatesan

MA Fashion Design Management University of the Arts, London United Kingdom.

Keywords: Accessibility, Digital inclusion, Ethical design, Silk artisans, Voice-first technology

Traditional craft sectors in India represent a critical intersection of cultural heritage, artisan livelihoods and sustainable development, yet remain structurally excluded from digital economies. The Indian handloom sector employs approximately 4.3 million artisans but contributes less than 2% to GDP, with only 23% of rural craft enterprises digitally active — a gap rooted not in artisan reluctance but in systemic failures of platform design around language, literacy and institutional access. This study examines how voice-first digital innovation can address these structural inequalities while enabling inclusive, transparent and ethical connections between Kanchipuram silk artisans and conscious consumers.

Grounded in design justice theory and the Stanford d.school Design Thinking framework, the research employed a five-phase qualitative methodology: secondary research, semi-structured interviews with six purposively sampled participants (weavers, designers and consumers), thematic analysis, iterative prototyping and usability testing. Six critical themes emerged: layered authenticity, exploitation and mistrust, technology as support not replacement, literacy and language barriers, recognition and authorship, and transparency versus trade secret protection. These findings shaped Artisan Studio, a voice-first platform enabling artisans to record craft narratives in native language with automatic transcription, authenticated through four parallel verification pathways, and underpinned by a transparent revenue model allocating 65% directly to artisans compared to the industry norm of 30–40%.

Usability testing confirmed that removing the typing barrier transformed digital participation from an exclusionary obligation into an empowering act. The study demonstrates that effective digital innovation for marginalised craft communities requires simultaneous attention to accessibility, authenticity, economic equity and cultural agency, offering a replicable model for justice-oriented design aligned with UN Sustainable Development Goal 9.

Paper ID: 93

Regenerative Futures: Circular Aesthetics in Fabrics, Fashion & Built Environments -Regeneration across clothing, interiors and materials

Amirthavarshini M¹, Sasmitha M²

^{1,2}Department of Fashion Technology PSG College of Technology, Coimbatore, India.

Keywords: Regenerative Design, Circular Economy, Circular Aesthetics, Fashion Systems, Sustainable Textiles, Built Environment.

This study explores the integration of regenerative and circular design systems within fashion and textile practices as a response to environmental challenges associated with conventional production models. The global fashion industry largely operates within a linear “take–make–dispose” framework that leads to significant material waste, intensive resource consumption, and increasing environmental degradation. Although sustainability has become an important concern within the industry, the practical adoption of regenerative and circular approaches remains limited in many mainstream fashion systems. This research therefore examines how circular aesthetics and regenerative strategies can contribute to reducing textile waste, extending garment lifecycles, and encouraging more responsible consumption patterns. The study adopts a qualitative and exploratory research approach based on secondary data analysis.

Information was collected from peer reviewed journal articles, academic books, industry reports, and credible publications related to circular economy principles, regenerative design, and sustainable fashion systems. A comparative analysis was conducted to examine differences between linear and circular production models, particularly regarding material efficiency, waste generation, and design strategies such as upcycling and closed-loop production systems. The findings suggest that conventional garment manufacturing processes discard approximately 25–40% of textile material during production stages such as pattern cutting and fabric processing. Circular design strategies, including upcycling and material recovery, allow a significant portion of pre-consumer textile waste such as fabric remnants, surplus materials, and rejected textiles to be reintegrated into new design outputs. In addition, circular aesthetics contribute to emotional durability by creating meaningful design narratives that encourage longer garment use. The study concludes that regenerative and circular design systems provide an effective pathway toward more environmentally responsible fashion practices by improving material efficiency, reducing waste generation, and supporting sustainable production and consumption patterns.

Paper ID: 49

Tactile Landscapes: A Design led exploration of interior textiles using 3D printing

Uthra S Ganesh¹, G Krishnaraj²

¹IDC School of Design Indian Institute of Technology, Bombay Mumbai, India.

²Department of Textile Design line 3: National Institute of Fashion Technology, Chennai Chennai, India.

Keywords: 3D Printing; Research through Design; Digital Craft; Hybrid Material; Textile Design

This study explores how design-led experimentation with digitally fabricated textile surfaces can reintroduce tactile and sensory experiences in domestic interior fabrics. Contemporary environments often prioritise visual uniformity over tactile diversity, resulting in smooth surfaces that limit haptic experiences. This reduction in sensory elements contributes to interiors that are visually cohesive but experientially flattened, where touch, texture and material responsiveness are secondary (Gibson, 2015; Pallasmaa, 2005). While this gap of tactility has been addressed with fashion through a variety of explorations including additive manufacturing, such techniques remain less explored with the context of interior textiles. By leveraging Fused Deposition Modelling (FDM) on flexible substrates, designers can program the materiality by controlling the topographical relief to create interactive surfaces, transforming a mesh into a responsive hybrid interface. Through a Research through Design (RtD) approach, the study reveals that digitally fabricated textile surfaces can generate ‘tactile landscapes’, these are prototyped using a desktop 3D printer where Polylactic acid (PLA) filament is printed onto recycled polyamide nylon mesh fabric to create the hybrid fabric. The printed fabric interventions actively influence the touch, drape and light and shadow interaction within interior spaces. By positioning fabrication as the method of inquiry, the study suggests the process of making becomes the tool for understanding the sensory materiality (Karana et al., 2015; Zimmerman et al., 2007). The resulting artefacts serve not only as decorative and aesthetic elements for interior applications but can be programmed as functional interfaces where localised geometry, stiffness and surface finishes can direct the developed textile’s application and interaction with the environment and people.

Paper ID: 82

Nano to Neural: Biomimetic Thermo-Responsive Camouflage Textiles for Intelligent Environmental Illusion

Anneasa Manna

Department of Footwear Design and Production Footwear Design and Development Institute (FDDI), Kolkata, India.

Keywords: adaptive camouflage, biomimetic textiles, thermochromic pigments, smart fabrics, responsive materials, military textiles

Adaptive camouflage technologies have traditionally relied on static textile patterns designed to replicate specific environmental terrains such as forests, deserts, or urban landscapes. Although these pattern-based systems can provide effective concealment under stable environmental conditions, they remain fundamentally limited because they cannot dynamically adapt to changing environmental parameters such as lighting, temperature, and background color. In contrast, biological organisms such as cephalopods and chameleons demonstrate highly sophisticated camouflage mechanisms that enable them to dynamically alter their appearance in response to environmental stimuli. These biological systems provide valuable inspiration for the development of intelligent materials capable of environmental interaction.

This research proposes a biomimetic thermo-responsive camouflage textile architecture that integrates thermochromic pigments, pixel-based color modulation structures, and environmental sensing mechanisms to generate adaptive camouflage effects. Inspired by chromatophore mechanisms observed in cephalopods and structural coloration in chameleons, the proposed system consists of a layered textile structure including a translucent diffusion fabric layer, primary color pixel modules, a micro-actuation grid, and environmental sensing patches capable of detecting thermal and optical signals from surrounding environments. Through optical color mixing and thermo-responsive pigment activation, the system is designed to dynamically approximate environmental color conditions.

A conceptual experimental framework is proposed to evaluate system performance through color difference analysis, thermal imaging techniques, and durability testing under washing and abrasion conditions. Expected performance parameters are estimated based on previous research on thermochromic pigments and smart textile materials. The study contributes a biomimetic framework for the development of adaptive camouflage textiles capable of environmental interaction, with potential applications in military uniforms, outdoor adaptive garments, and responsive material systems.

Paper ID: 165

Co-Creating with Machines: A Framework for Responsible AI Integration in Design Practice

Aayushi Jaiswal¹, Abhay Kumar²

¹M.Des Student Dept. of Design Space NIFT Kangra, India.

²Independent Researcher, India.

Keywords: Artificial Intelligence, Creative Workflows, Design Practice, Ethical Design, Human–AI Collaboration, Responsible AI, UX Research

As artificial intelligence rapidly integrates into creative industries, the designer's role is evolving from solitary author to collaborative partner within human–machine systems. Yet this transition raises critical questions: How do designers work alongside intelligent tools while preserving human judgment, ethical discernment, and culturally informed sensitivity? While AI's technical capabilities receive considerable attention, there remains limited scholarly focus on practice-based frameworks that examine how designers meaningfully embed AI into everyday creative workflows. This gap is particularly significant for emerging designers navigating fashion, craft, and digital design contexts where cultural nuance and contextual understanding are essential.

This paper presents a practice-led investigation into hybrid intelligence in design, positioning AI as a supportive co-designer rather than an autonomous creative authority. Drawing on reflective design research informed by user experience (UX) methodology, systems thinking, and multidisciplinary practice, the study examines AI's role across research synthesis, visual ideation, user flow mapping, and design decision-making. Through documented project experiences using tools including Canva AI, Figma Make, ChatGPT, and Miro AI, the research critically analyzes how designers negotiate control, maintain creative agency, and establish ethical boundaries when collaborating with generative tools. The investigation demonstrates that effective human–AI collaboration requires designers to actively shape the interaction, applying empathy, cultural awareness, and contextual judgment to guide computational outputs. The paper offers a conceptual framework identifying four key principles for responsible AI integration: active partnership over passive tool use, human oversight and final authority, critical AI literacy, and ethical reflection as ongoing practice. This work contributes practical insights for youth designers seeking to engage AI creatively and responsibly, supporting design practices that are both technologically informed and grounded in human values — essential foundations for meaningful, future-ready creative innovation.

Paper ID: 138

Analyzing Visual-First XR Exhibition Design Through Distal Attribution and Proposing a Multisensory Conceptual Framework

K K Gayathri¹, Shimona Martin²

¹Fashion Communication, National Institute of Fashion Technology, Chennai, India.

²Leather Design, National Institute of Fashion Technology, Chennai, India.

Keywords: Extended Reality (XR); Exhibition Design; Multisensory Design; Emotional Experience; Immersive Environments; User Experience

The rapid expansion of digital technologies has transformed exhibition and retail environments into immersive experience-driven spaces. Extended Reality (XR), including Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR), is increasingly used in exhibitions to enhance visitor engagement. However, many XR-based exhibitions prioritize technological spectacle over emotional depth, narrative coherence, and multisensory experience. This study investigates how XR technologies can enhance exhibition design through multisensory and emotive design principles in order to improve visitor engagement and experiential quality.

The research adopts a mixed-method approach combining qualitative and quantitative methods. Primary data was collected through a structured survey involving 65 participants, primarily youth aged 18–29 years, and an expert interview with an exhibition design professional with over ten years of industry experience. Quantitative data was analysed through descriptive statistical interpretation, while qualitative responses were examined to identify patterns in emotional responses to immersive spaces. The study also draws upon theoretical frameworks including Self-Determination Theory (SDT) and multisensory design principles to explain how emotional engagement and intrinsic motivation can be enhanced within XR-based exhibition environments.

Findings indicate that most current immersive spaces focus heavily on visual spectacle and technological demonstration rather than emotional and narrative engagement. Survey results reveal that emotional experience (69.2%) is the most significant factor influencing memorable exhibition experiences, followed by interactivity and storytelling. Multisensory elements such as sound, lighting, and spatial design were found to significantly affect visitors' emotional responses.

The study proposes a conceptual framework that integrates XR technology with multisensory and emotive design principles to enhance visitor experience and memory retention in exhibition environments. The findings highlight the importance of designing immersive spaces that balance technological innovation with emotional storytelling, sensory engagement, and user-centered experience design.

NOTE





Social Imagination, Inclusion & Ethical Design Innovation



SUB-THEME 3 : SOCIAL IMAGINATION, INCLUSION & ETHICAL DESIGN INNOVATION

Focus: Belonging, equity, accessibility, design justice

Designing for all communities Compassionate
Innovation & Ethics

Universal Design 3.0

Design for the Margins Empathy Engines for
transformation

Paper ID: 10

CORE Radiance by Sephora : Designing a Dual - format beauty - wellness product through strategic licensing

Amritha Christy¹, Maitreyee Bhagwate², Maya Wissak³, Prabhjot Kaur⁴

^{1,2,3,4} Fashion Merchandising-LIM College, New York, United States.

Keywords: Brand extension, Dual-format beauty, Ingestible skincare, Strategic licensing, Topical care

The convergence of the beauty and wellness industries has significantly reshaped consumer expectations, with increasing demand for products that support internal health alongside visible, external care. Beauty is no longer viewed solely as a surface-level outcome but as something influenced by nutrition, lifestyle, and long-term wellbeing. This shift is particularly evident among Gen Z and Millennial consumers, who prioritize ingredient transparency, functionality, and authenticity in their purchasing decisions. Despite representing approximately 36% of the U.S. population, these generations account for 41% of wellness-related spending, demonstrating their growing influence on the evolution of the beauty and wellness markets.

This paper examines the development of a dual-format product concept designed to function both as an ingestible wellness formulation and a topical skincare treatment. The study is informed by first-hand market observation, informal consumer surveys, and industry analysis aimed at understanding how consumers navigate topical skincare, supplements, and wellness beverages. Findings reveal that while interest in ingestible beauty is growing, consumer trust remains fragile due to concerns surrounding safety, regulatory oversight, and ingredient transparency.

To address these challenges, the paper proposes Core Radiance by Sephora, a conceptual brand extension that integrates ingestible beauty within Sephora's existing retail ecosystem. Rather than developing specialized manufacturing capabilities internally, the project evaluates licensing as a strategic execution model. Under this structure, Sephora functions as the brand licensor responsible for consumer education and retail distribution, while Groupe Berkem serves as the licensed manufacturing partner, providing expertise in freeze-drying technology and regulatory compliance.

By examining licensing as part of the product development process, the study demonstrates how responsibility, expertise, and operational risk can be distributed across the supply chain while maintaining brand oversight and consumer trust. Ultimately, the research highlights how partnership-driven innovation, supported by trusted retail environments and transparent communication, can enable scalable and responsible development of hybrid beauty-wellness products.

Paper ID: 51

Designing from the Margins: Youth Artisan-Led Traditional Costume Design Practice

K.P.N Bhagya¹, P.V.M. Karunaratne², G.M. Ranathunga³, H.R.A.T. Ranaweera⁴

^{1,2,3,4}Department of Textile and Apparel Engineering, University of Moratuwa, Colombo, Sri Lanka.

Keywords: Creative disruption, Culture, Innovations, Traditional costume practice, Youth artisan

Traditional costume production in Sri Lanka is often seen as a marginal heritage practice associated with elder generations. This study challenges this view by highlighting young artisans as active agents of social innovation. By focusing on nilame and ohoriya practices, it explores how youth artisans engage in creative disruption within cultural production while adhering to ethical and care-centred making. The study uses a qualitative research design with 17 semi-structured interviews of young traditional costume artisans in Sri Lanka. Thematic analysis was conducted to uncover patterns of innovation, care, and social impact in youth-led costume practices. The findings reveal that youth artisans introduce material, colours, design motifs, sartorial aspects, and marketing innovations that reframe traditional costume as a living system rather than a static cultural artefact. This study highlights youth-led creative disruption in traditional costume design through care-centred, responsible, and innovative practices. By positioning young artisans as designers and social innovators, it extends design-for-the-margins discourse and demonstrates how culturally embedded craft systems function as sites of youth-driven innovation, informing design research, cultural policy, and socially responsible fashion practices.

Paper ID: 155

Collective Imagination in Indian Craft Ecosystems

Lalitha Alwan¹, Francesco Mazzarella²

^{1,2}London College of Fashion, University of the Arts London, London, United Kingdom.

Keywords: Transformation design; co-design; Indian craft ecosystems; collective imagination; cultural sustainability; speculative design

Craft systems in India are culturally rich, yet structurally fragile, marked by fragmented stakeholder relationships, uneven power dynamics, and limited opportunities for artisans to participate in decision making or long-term futures thinking. At the same time, emerging designer–artisan partnerships led by younger practitioners are beginning to experiment with more collaborative and reflexive approaches to craft practice. With this context in mind, this paper discusses a research project aimed at investigating how design can support the transformation of Indian craft ecosystems by enabling more equitable, future-oriented forms of collaboration and governance. The project integrates transformation design, speculative design, and co-design to explore how design might act not only as a tool for product development but as an infrastructural, relational practice. Using a Research through Design methodology, the project combined semi-structured interviews, co-creation workshops, and thematic analysis to generate insights into current collaboration dynamics. These insights informed the development of a range of practice-based outputs: a participatory foresight toolkit to support multi-stakeholder dialogue, and a series of speculative artefacts that imagine alternative governance scenarios. A public website was created to ensure the accessibility and open dissemination of these tools. The research discussed here demonstrates that fostering systemic change in the craft sector requires tools that support both individual reflection and collective imagination. The paper argues that speculation, when grounded in community realities, can help address power asymmetries by creating conditions for inclusive foresight. However, further work is needed to – linguistically and culturally – adapt

Paper ID: 184

Bio-Based Functional Textiles for Circular Fashion and Living Systems

Mahalakshmi Subramanian¹, Mikuláš Hurta²

^{1,2}NIL Textile, s. r. o., Ostrava, Czech Republic.

Keywords: Bio-based textiles; Circular fashion; Functionalisation; Lignin coating; Sustainable materials

The growing environmental impact of petroleum-based synthetic fibers has accelerated the development of sustainable alternatives in textile materials. Among bio-based polymers, polylactic acid (PLA) has gained considerable attention due to its renewable origin, biodegradability and compatibility with conventional textile processing technologies. However, improving the functional performance of PLA textiles remains an important research focus, particularly for applications requiring enhanced surface properties. In this study, knitted PLA fabrics were investigated as substrates for bio-based surface coatings aimed at improving hydrophobic performance. Particular attention was given to coating systems incorporating lignin-derived materials, a naturally abundant aromatic biopolymer known for its hydrophobic, UV-blocking and antioxidant characteristics.

PLA textile samples were coated using bio-based formulations developed within a collaborative research framework and subsequently evaluated for surface performance. Hydrophobic behaviour was assessed through water repellency testing conducted before and after washing procedures and after a period of environmental storage. The results indicated that hard-coated PLA fabrics maintained stable hydrophobic performance, demonstrating the potential of bio-based coatings to effectively modify PLA textile surfaces. In contrast, fiber-based soft coatings showed satisfactory hydrophobicity initially and after washing but exhibited reduced performance following extended storage at room temperature.

These observations highlight both the opportunities and the challenges associated with integrating bio-derived functional coatings with PLA textile substrates. The study demonstrates that PLA textiles can serve as effective platforms for sustainable surface functionalisation while emphasising the need for further investigation into long-term coating stability and fiber-coating interactions. The combination of PLA fibers and lignin-based functional materials represents a promising pathway toward environmentally responsible textile solutions aligned with circular material strategies and emerging bio-economy initiatives.

Paper ID: 23

Mapping Public Opinion on Urban Cleanliness and Civic Engagement in Urban India for guiding Design-Centric solutions

Manish Joshi¹, Andreas Savvides²

¹Department of Product Design Pearl Academy New Delhi, India.

²Department of Architecture University of Cyprus Nicosia, Cyprus.

Keywords: Urban Cleanliness, Littering behaviour, Civic Engagement, Broken Windows Theory, Urban India

Urban areas in India struggle to maintain cleanliness and sanitation, mainly due to uncontrolled littering in public spaces and inadequate waste disposal infrastructure. Cleanliness is a crucial determinant of quality of life, health, and urban living. Despite the initiation of programmes such as the Swachh Bharat Mission (SBM) in 2014, municipalities like the Municipal Corporation of Delhi (MCD) continue to rank low in performance ratings. Frequently attributed factors of this adverse condition often point to ineffective policy, unregulated urbanisation, and insufficient civic engagement. This research seeks to clarify consumers' opinions of urban cleanliness improvement to provide pertinent insights within an Indian context.

This study applied a mixed-methods approach, combining site inspections to gather objective External Factors and Broken Windows Theory (BWT) indicators with a Public Cleanliness Survey conducted among the general public, business owners, and municipal staff. The findings of the study point towards an empirical validation of the BWT feedback loop: the general public justifies littering pointing to the current dirtiness of the streets. Businesses are satisfied with the level of cleanliness services, although this satisfaction exhibits a markedly weak negative association with the actual state of the trash on the ground. A prime reason for this disconnect being the business owners' proactive behaviour in keeping their own surroundings clean. The municipal staff on the other hand point to the unsupportive public behaviour as a reason for the persistent filth.

The identified gap between the opinions of the stakeholders indicates the potential to create a design-orientated framework that integrates aesthetic infrastructure with practical commercial incentives to align stakeholder behaviours, thus fostering accountability and enhancing civic engagement in urban cleanliness initiatives.

Paper ID: 128

Piezoelectric Sensing Technology in Wearable Textiles

Aliya Raoof¹, Pravin P Chavan²

¹Research Scholar, Knitwear Design Department, National Institute of Fashion Technology, Kannur, India.

²Assistant Professor, Knitwear Design Department, National Institute of Fashion Technology, Kannur, India.

Keywords: Piezoelectric sensing, wearable textiles, smart fabrics, PVDF, textile sensors, energy harvesting, sportswear technology, smart clothing, footwear sensing, interactive wearables

Piezoelectric sensing technology is transforming wearable textiles by enabling fabrics to detect mechanical stimuli such as pressure, motion, bending, and vibration, and convert them into signals that can power devices or provide real-time monitoring. Unlike conventional rigid sensors, piezoelectric textile systems embed sensing functions directly within soft, flexible, and breathable structures, preserving comfort, wearability, and long-term usability. This review examines the underlying principles of the piezoelectric effect, the historical evolution from rigid ceramic-based sensors to flexible polymer- and composite-based materials, and the fabrication strategies such as electrospinning, twist and melt spinning that facilitate integration into fibers, yarns, and fabrics. Special emphasis is placed on polymer-based systems, particularly poly(vinylidene fluoride) (PVDF) and its composites, which combine mechanical flexibility, high piezoelectric response, and compatibility with conventional textile processing. Applications across sportswear, accessories, clothing, and footwear are analyzed, highlighting functions such as motion tracking, gait and posture analysis, self-powered energy harvesting, and health monitoring. The review also discusses recent innovations, including hybrid nanocomposites, textile-based electrodes, and IoT-enabled smart systems, that demonstrate the transition from laboratory prototypes to wearable-ready technologies. Finally, persistent challenges such as durability, washability, signal stability, and large-scale manufacturability are critically addressed.

Paper ID: 38

Thermal Comfort and Youth Wellbeing: A User-Centric Evaluation of Heat-Based Menstrual Care for Primary Dysmenorrhea

Ria Jeej¹, Rimsha Zaidi²

¹Research Scholar, Knitwear Design Department, National Institute of Fashion Technology, Kannur, India.

²Department of Fashion Technology National Institute of Fashion Technology, Chennai, India.

Keywords: Primary Dysmenorrhea, Heat therapy, Menstrual comfort, Youth Wellbeing, User-centric design

Primary dysmenorrhea is a highly prevalent gynecological condition that significantly interferes with daily activities, academic performance, workplace productivity, and overall quality of life among menstruating individuals. Characterized by recurrent lower abdominal cramping and associated symptoms such as fatigue, nausea, and back pain, it often leads to absenteeism and reduced functional capacity. Although pharmacological treatments such as nonsteroidal anti-inflammatory drugs (NSAIDs) are commonly used, many individuals prefer non-pharmacological approaches due to concerns about side effects, long-term medication use, or personal preference. Among these alternatives, heat therapy is widely recognized as a simple, accessible, and cost-effective method for menstrual pain relief. However, despite its popularity, the usability, practicality, and overall effectiveness of existing heat-based solutions remain insufficiently examined from a user-centered design perspective. This study evaluates the limitations of currently available heat-based menstrual pain relief solutions and identifies user needs to inform the development of improved wearable alternatives. A structured survey was conducted with 385 respondents representing diverse age groups and lifestyles. The survey assessed menstrual pain characteristics, pain-management practices, satisfaction levels, and perceived limitations of commonly used heat-based solutions. The questionnaire included categorical and Likert-scale items, and the data were analysed using bar charts, Spearman's correlation, and one-way ANOVA tests. Spearman's correlation revealed a significant positive relationship between pain intensity and disruption of daily activities ($r = 0.57$, $p < 0.001$), and a weaker but significant relationship between pain duration and activity disruption ($r = 0.36$, $p < 0.001$). Additionally, one-way ANOVA indicated significant differences in perceived limitations across lifestyle activity groups ($F(2, 380) = 4.51$, $p = 0.012$). Findings indicate that while heat therapy is generally perceived as effective and comforting, most existing solutions are described as bulky, movement-restrictive, non-portable, and visually indiscreet. Additionally, users reported uneven heat distribution, short duration of warmth, and skin irritation. Significant associations were identified between pain severity, disruption of daily activities, and dissatisfaction with current solutions. The study recommends development of garment-integrated heat technologies capable of delivering sustained, gentle, and evenly distributed warmth without restricting mobility, thereby enhancing comfort, discretion, and everyday usability.

Paper ID: 179

The Role of Empathy in Designing Cohesive Cognitive Learning Spaces

Subhasmita Brahma¹, Anwita Hazra²

¹Assistant Professor in Multimedia, Animation and Graphics Institute of Leadership, Entrepreneurship and Development (of Affiliation Maulana Abul Kalam Azad University of Technology, West Bengal Kolkata, India.

²M.sc. in Multimedia, Animation and Graphics, Institute of Leadership, Entrepreneurship and Development (of Affiliation Maulana Abul Kalam Azad University of Technology, West Bengal) Kolkata, India.

Keywords: Empathy; Inclusive Design; Cognitive Learning Spaces; Ethical Design Innovation; Belonging; Youth-Centered Design; Social Innovation

The environments of learning are important in influencing cognitive involvement, imagination, and intellectual involvement. Educational spaces in modern youth-driven innovation ecosystems are starting to be more anticipated to enable cooperation, interdisciplinary thought, and technological exploration. Nevertheless, even with the development of the digital learning infrastructure, most learning settings are not emotionally connected to the cognitive and psychological needs of learners, as many of them are still functional and efficient by themselves. This study addresses empathy as a design methodology to develop cohesion in learning cognitive environments that contribute to inclusive engagement and ethical innovation.

The research strategy presented in the study is a mixed-method research (theoretical synthesis and empirical data based on a survey of 67 participants, who included undergraduate students (67.2%), postgraduate students (20.9%), faculty members (10.4%), and other students (1.5%)). The questionnaire was on learning space perceptions, environmental variables affecting concentration, and opinions on empathy-orientated educational design. All the quantitative responses were analysed using descriptive statistics, and thematic analysis was used to analyse all the qualitative responses.

Results have shown that spatial settings have a major impact on cognitive activity and emotional health. The proportions who said the spatial design influenced creative and critical thinking were almost 73.1%, and those who said that future learning environments should be redesigned to favour emotional wellbeing and empathy were 71.6%. The most influential environmental factors on concentration were noise levels (40.3%), comfort on seating (23.9%), and the lighting conditions (16.4%). Qualitative responses also emphasise the significance of natural light, group work, space and fostering learning cultures.

On the basis of these results, the paper presents the Empathic Spatiality Framework as the union of the empathy theory, ethics of care, principles of universal design, and cognitive spatial theory. The framework theorises the learning spaces as relational spaces where emotional safety, cognitive engagement, and inclusive participation overlap. The research, by placing empathy as a methodology of structural design over and above being representative of an added value, adds to the current conversation on ethical design innovation, inclusive learning environments, and youth-focused spatial design

Paper ID: 150

Designing Belonging in Informal Thrift Ecosystems: A Systems Study of Sarojini Nagar Market, New Delhi

Yogesh¹, Vishu Arora²

^{1,2}Department of Design Space National Institute of Fashion Technology, Panchkula, India.

Keywords: Sarojini Nagar Market, Informal Thrifting, Systems Thinking, Inclusivity, Urban Belonging, Circular Fashion

Informal thrift markets play an important role in supporting circular fashion systems and urban livelihoods in many developing economies. Sarojini Nagar Market in New Delhi represents a dense and dynamic informal fashion ecosystem where affordable clothing retail, reuse practices, and informal labour networks operate within a high-footfall public marketplace. Despite its strong economic and environmental contributions, the market faces persistent challenges such as overcrowding, spill-over retail activity, sanitation pressures, and spatial management interventions that influence accessibility and user experience.

This study examines Sarojini Nagar Market through a systems-thinking framework to understand how spatial organisation, governance practices, and informal retail dynamics shape inclusivity and everyday experiences of urban belonging. Primary data were collected through field observations, spatial walkthroughs, and informal interviews with vendors, workers, customers, and market association representatives. A system map of the market ecosystem was developed and analysed using feedback loops, Iceberg and Fishbone models to identify deeper structural drivers influencing system behaviour.

The analysis was further supported through a People–Planet–Profit sustainability matrix, within which the seven principles of Universal Design were integrated to assess accessibility and user experience in the market environment. The findings indicate that while the market performs strongly in terms of economic accessibility and circular fashion practices, spatial capacity limitations, accessibility and information gaps, and increased human effort required to navigate dense retail environments affect overall system stability and inclusivity. Drawing insights from the street vending management framework implemented in Bangkok, the study proposes design-led spatial management strategies such as spill-over zone marking, cleanliness-linked compliance, vendor identification through market associations, and time-based spatial regulation. This study demonstrates how systems thinking combined with design-led spatial strategies can contribute to more inclusive and sustainable management of informal urban markets.

Paper ID: 13

The Yardstick of Design Understanding and Its Interpretation by the Durrie Weavers of the Raipur Rani Cluster: A Case Study

Devesh Mishra¹, Rakhi Wahee Pratap²

¹Student, Affiliation: Department of Textile Design, NIFT Panchkula, Haryana, India.

²Affiliation: Department of Textile Design, NIFT Panchkula, Haryana, India.

Keywords: Artisan-Led Innovation; Design Interpretation; Durrie Weaving; Epistemic Justice; Raipur Rani; Handloom Cluster; Tacit Knowledge

This case study examines the design intelligence and market adaptability of traditional durrie weavers in the Raipur Rani cluster of Panchkula district, Haryana. The cluster formally recognised by DCMSME as having 388 functional units, Rs 25 crore annual turnover, and 5,500 direct and indirect jobs has sustained handloom production despite workforce contraction from approximately 800 to 300 active weavers, all above age 40. Drawing on two weeks of primary fieldwork comprising semi-structured interviews with 15 artisans, process observation, and market documentation, the study reveals an internally developed ‘yardstick of design understanding’: a self-calibrating framework through which weavers balance production pragmatics, market fit, and structural adequacy all without formal design education. The paper documents the cluster’s historical evolution (1970s–2024), the technical differentiation between regular and Panja durries, the impact of Chinese powerloom machinery on handloom viability, NABARD’s recent OFPO intervention (2022), and a rich indigenous technical vocabulary encoding embedded craft knowledge. Framed through Sennett’s (2008) concept of tacit craft knowledge and Fricker’s (2007) epistemic injustice, the study argues for reorienting design interventions to recognise artisans as primary knowledge holders.

Paper ID: 47

Reimagining Fashion Retail through Experiential Customisation: An Ethical and Inclusive Design Approach

Akshaya Manoj M P¹, Sonam Sahu², Sonam Sahoo³, Balasubramanian Sambasivam⁴, L. K. Das⁵, B. K. Chakravarthy⁶

^{1,5,6}School of Design Innovation, Mahindra University Hyderabad, India.

^{2,3,4}Centre for Sustainability, Mahindra University Hyderabad, India.

Keywords: Consumer Participation; Experiential Customisation; Fashion Retail; Inclusive Fashion; Textile Print Production

The Fashion and textile industry had shifted from a system grounded in durability and long-term use to one driven by speed, volume, and trend-based consumption. Clothing has transcended its basic function of providing coverage and has evolved to become a powerful medium of self-expression. However, the buying cycle has shortened, leading to frequent garment disposal, much of which ends up in landfill sites. Globally, approximately 90% of clothing disposed of in landfills is still reusable. In addition, textile production processes release toxic waste that negatively impacts humans, animals, and the environment.

The purpose of the study is to explore sustainability in the context of user-driven garment customisation and to examine whether an alternative retail model can address environmental, ethical, and social challenges embedded within current fashion production and consumption practices. This paper employs a narrative literature review to analyse current systems within the fashion and textile industry, with the aim of developing a concept that offers a sustainable solution to reduce production and landfill waste. The concept proposed in the model is called experiential customisation. To assess the model's validation, a quantitative survey was administered with 54 respondents aged 16-35, living in urban, semi-urban, and rural areas, who indicated a positive reception of the proposed retail model. The survey examines factors influencing consumer behaviour, user willingness to try new retail models, and consumer buying power, among other factors. The paper discusses and correlates these consumer choices with the implications of buying behaviour for the proposed concept of experiential customisation.

Paper ID: 84

Designing for the Elderly: Integrating Cognitive Ergonomics and Universal Design to Enhance Autonomy in an Aging Population

Ms. Hemangi Chaturvedi¹, Mr. Mohit Kumar², Mr Siddharth³

^{1,2,3}Assistant Professor- National Institute of Fashion Technology, India

Keywords: Ageing Ergonomics, Cognitive Load Theory, User-Centred Design, Inclusive Design India, Fall Prevention Footwear, Digital Inclusion Elderly, Participatory Redesign

India's ageing population is projected to reach 319 million by 2050, representing 20% of the total demographic, amid global trends where the 60+ cohort will double to 2.1 billion (United Nations, 2019; Census of India, 2011). This shift exacerbates challenges in Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL), with over 30% of Indian seniors reporting limitations and 20–30% experiencing annual falls leading to injuries and dependency (LASI Wave 1, 2017–18; NSSO 75th Round, 2017–18). Existing ergonomic guidelines, rooted in Western anthropometric data, overlook India-specific factors like cultural practices (e.g., saree use, squatting) and cognitive declines, creating mismatches in products such as slippery bathroom slippers, hard-to-grip exercise tools, cluttered television remotes, and anxiety-inducing ATM interfaces.

This research develops and validates the CEIIF (Cognitive and ergonomic Informed Indian framework), integrating Cognitive Load Theory (CLT; Sweller, 1988, 2011, 2020) with User-Centered Design (Norman, 2013) and Universal Design principles (Mace et al., 1997) to reduce extraneous cognitive load, enhance germane load via familiar metaphors, ensure multimodal error-tolerant interactions, and incorporate participatory iterative validation. Through a mixed-methods approach—including a Scopus systematic review (2010–2025), semi-structured interviews (n=12 seniors aged 60–76 from urban North India), focus groups, thematic analysis (Braun & Clarke, 2019), and participatory redesign—key themes emerged: mobility/joint weakness, sensory impairments (vision/hearing), digital interface frustrations, household chore difficulties, forgetfulness/safety risks, and gadget assistance needs.

Implications extend to policy (Accessible India Campaign) and industry, advocating open-source anthropometric databases for culturally tailored gerontechnology to foster autonomy in an ageing population.

Paper ID: 119

Move Out and Play! Designing Games to Stimulate Movement and Engagement in Students

Vayuna Pandey¹, Shrishti², Niharika Bhatt³, Anjali Rana⁴, Varnika Baveja⁵, Alka Rawat⁶

^{1,5}Department of Textile Design, NIFT Kangra, India.

^{2,4}Department of Fashion Design, NIFT Kangra, India.

³Department of Accessory Design, NIFT Kangra, India.

⁶Department of Fashion Communication, Assistant Professor, NIFT Kangra, India.

Keywords: Education, Children's games, Design, Engagement, Movement, Students

Studies worldwide show that children's screen time is increasing while their physical activity is decreasing. This trend leads to a range of disorders and health issues related to both the physical and mental health of children. As a result, there is a strong need to develop programs that encourage these children to spend more time outdoors. This research aims to address that gap and suggests a set of qualities that can help create outdoor games. The games in question are intended to promote outdoor activity while also improving cognitive abilities. Data were collected from schools in the Kangra district, focusing on students aged 10 to 14. A structured survey questionnaire was the main tool used for gathering data, and the statistical analysis was performed on the combined student responses.

The findings revealed a predominant preference among the respondents for games that presented both physical and mental challenges. Furthermore, this paper delineates components derived from indoor, outdoor, and digital games, thereby providing an engaging, interactive, and movement-oriented experience designed to stimulate social interaction.

The study proposes developing a hybrid game that combines classic board game elements with a simple digital tracking device to monitor progress and offer rewards. The aim is to create a game that spark creativity and motivates students to adopt healthier habits and stay active throughout physical activity.

Paper ID: 194

Rooted Tradition And Sustainable Weave Practices Of The Tangkhul Tribe Of Manipur

Worsochon Kasar

II - B.Sc. Fashion Designing, SRM Institute of Science and Technology, Ramapuram, Chennai, Tamil Nadu, India.

Keywords: Indigenous Textiles, Tangkhul Weaving, Traditional Craftsmanship, Sustainable Fashion, Ethical Design Innovation and Slow Fashion

This study explores the traditional weaving practices of the Tangkhul tribe of Manipur as more than a textile craft, positioning weaving as a living archive of memory, identity, and community knowledge. Textiles in India have been produced since time immemorial, which function as cultural identity. Located in the verdant hills of Ukhrul district, the Tangkhul tribe represents one of the most culturally rich communities of Northeast India. However, its vibrant textile tradition is gradually fading under contemporary pressures.

Indigenous textile traditions in India are increasingly vulnerable due to rapid industrialization, cultural homogenization, and the decline of intergenerational transmission of craft knowledge. Despite its strong symbolic language, social relevance, and ecological foundations, Tangkhul weaving remains underrepresented in academic and mainstream design discourse. This marginalization has limited recognition of its significance as a model for ethical and sustainable design innovation.

The research adopts a qualitative, documentation-based methodology, drawing on visual analysis of traditional textiles and cultural study to examine the relationship between material practices, motif narratives, community identity, and sustainable production.

Findings reveal that Tangkhul weaving embodies sustainability through locally sourced materials, low-energy handloom techniques, durability-oriented production, and collective craftsmanship. The tradition emphasizes longevity, cultural continuity, and ethical labour practices, aligning closely with contemporary concepts such as slow fashion, circular design, and inclusive innovation.

The study positions Tangkhul weaving as rooted innovation, where tradition and adaptation coexist dynamically, contributing meaningfully to sustainable fashion discourse and advocating for the integration of indigenous craft knowledge into modern design education and the future fashion industry.

NOTE



**POSTER
ABSTRACTS**





Future Fashion, Living Systems & Sensory Materiality

Paper ID: 126

Living Intelligence: When Responsive Fashion Meets Smart Technology

Harish P

BTech. FASHION TECHNOLOGY, PSG COLLEGE OF TECHNOLOGY,

Fashion generally remains static even though human activities and environments constantly change. This research explores the idea of Living Intelligence, where responsive materials and smart technologies transform clothing into an adaptive and interactive system.

Through literature analysis and conceptual design exploration, the study investigates how garments can respond to body conditions, temperature variations, and environmental factors. The findings suggest that intelligent fashion systems have the potential to enhance user comfort, promote sustainability, and create a stronger emotional connection between people and their clothing.

Paper ID: 59

Reframing Textile Recycling at the Fabric Level: A Craft-Led Perspective on Heterogeneous Textile Waste

Maitreyee Datar

Department of Design Management (M.Des), MIT Institute of Design, India

Keywords: craft-based recycling · godhadi textiles · textile waste vernacular practices · waste heterogeneity

The escalating global textile waste crisis necessitates innovative, context-specific solutions, particularly in India, a major importer of textile waste (Das & Dwivedi, 2024). This paper critically examines prevalent mechanical and chemical recycling systems, highlighting their limitations in processing diverse, often contaminated textile waste streams.

Existing routes predominantly result in downcycling to lower-value applications due to fibre degradation. This study explores craft-level, manual aggregation techniques as a complementary approach, drawing from India's rich tradition of textile reuse (Maione, 2023). The key outcome is a conceptual framework positioning craft-based scrap aggregation as a potential fourth pathway complementing existing recycling.

Paper ID: 149

Transforming Knitwear Textile Industry Waste into Sustainable Textile Products- A Circular Economy Approach”

Sandeep Kidile¹, Mohini Mahajan², Kashmira Karande³, Akanksha Nautiyal⁴

¹ Associate Professor, Department of Textile Design, NIFT Mumbai, India

^{2, 3} UG Knitwear Design Students, NIFT Mumbai, India

⁴ Assistant Professor, Department of Textile Design, NIFT Mumbai, India

Keywords: Industry Waste, Reclamation, Fabric Properties, Circular Fashion, Re knit.

The significant increase in the standard of living of people has led to overconsumption of textiles. As global populations engulf higher standards of comfort, style, and accessibility, the demand for textiles, particularly knitwear, is growing at an accelerating rate. This overconsumption has culminated in vast quantities of textile waste, much of it generated at the industrial level due to manufacturing defects, quality control rejections, and production overruns. Recycling textile waste has gained more popularity in recent years, driven by growing awareness on environmental degradation, resource depletion, and the urgent need for circular economy models.

The study investigates sustainability in flat knits through a material driven design that focuses on reuse without chemical intervention. It was developed from the systematic exploration of pre-consumer flat knit waste, which were categorized into reclaimable and non-reclaimable structures. Rather than leaning on recycling (chemical) technologies that modifies fibre decency, the work emphasizes on transformation through Reclaim, Reuse and Re knit that preserve material authenticity.

Paper ID: 111

Regenerative Future: Circular Aesthetics in Fabrics, Fashion & Built Environments

Yashini N

BTech. FASHION TECHNOLOGY, PSG COLLEGE OF TECHNOLOGY

The fashion and built environment sectors contribute significantly to global resource depletion, material waste, and carbon emissions. This research investigates how regenerative design principles and circular aesthetics can reshape future material systems across fashion, textiles, and architecture.

A mixed-method approach combining survey analysis, literature review, and case study examination was employed to explore awareness of regenerative concepts and the potential of emerging biomaterials. Findings reveal growing recognition of sustainability and strong interest in biomaterial innovation, while barriers such as production costs, technological limitations, and limited consumer awareness remain significant. The study highlights the importance of interdisciplinary collaboration between fashion, material science, and architecture to advance regenerative material systems and support more resilient and ecologically responsible design futures.

Paper ID: 34

3D Printing: A Regenerative Approach to Fashion Embellishment through Biodegradable Button Systems

Sakthi Sree B

Visual Communication Designer, ThinkMetal Private, Limited., Chennai, India
Alumna – National Institute of Fashion Technology Chennai

Keywords: Additive manufacturing, biodegradable polymers, circular design, fashion embellishments, sustainable fabrication

Contemporary design practice increasingly demands production systems that are environmentally responsible while remaining accessible to independent designers and small-scale creative studios. Additive manufacturing has emerged as a promising digital fabrication method capable of supporting localized production, material experimentation, and scalable customization. This research investigates the potential of 3D printed biodegradable button systems as a regenerative alternative to conventional plastic garment fasteners typically produced through injection molding using petroleum-based materials. Such traditional manufacturing processes rely on centralized production infrastructures, expensive molds, and high minimum production volumes, limiting design flexibility and contributing to material waste.

Using desktop Fused Filament Fabrication (FFF), this study explores the fabrication of customizable garment buttons using biodegradable thermoplastics such as Polylactic Acid (PLA) and Polyhydroxyalkanoates (PHA). Through material investigation, workflow comparison, and prototype development, the research demonstrates how additive manufacturing enables localized fabrication, on-demand production, reduced material waste, and enhanced design customization within emerging circular fashion production systems.

Paper ID: 96

Designing with Living Materials For A Circular And Sensory Future

Srimathi A R¹, Swathi R²

^{1, 2} B. Tech Fashion Technology, PSG College Of Technology

Keywords: Sustainable fashion, circular design, aesthetics, material perception, consumer behaviour.

Sustainable fashion and regenerative design address environmental impacts, yet adoption remains limited due to a conflict between aesthetics and sustainability. Consumers often perceive eco-friendly materials as less attractive, comfortable, or premium.

This study examines how aesthetic perception, sensory experience, and behaviour influence acceptance of circular materials using qualitative literature analysis. Findings show that material perception, emotional engagement, and social influence strongly affect adoption. Enhancing aesthetic appeal, tactile quality, and storytelling can improve acceptance and willingness to adopt sustainable design solutions.



Fashion Intelligent Technologies, Hybrid Craft & Digital Futures

Paper ID: 3

The Creative Algorithm: Human–AI Co-Creation in Data-Driven Fashion Design

Mohammed Saqib Khan¹, Abdullah Najeeb²

¹, ²Khaja Bandanawaz University, Gulbarga, India

The fashion industry has traditionally relied on human intuition, cultural interpretation, and historical trends to create new designs. With the growing integration of Artificial Intelligence (AI), fashion design is increasingly supported by data-driven methods that analyze consumer behavior, social media signals, and fashion archives to uncover patterns and insights. This study introduces a conceptual framework called The Creative Algorithm, which explains how designers collaborate with AI systems in the design process.

Within this framework, AI analyzes data and generates multiple design possibilities, while human designers interpret, refine, and select these outputs using creativity, cultural understanding, and ethical judgment. The study highlights that AI functions most effectively as a creative collaborator rather than a replacement, expanding design possibilities while preserving the central role of human creativity in fashion innovation.



Social Imagination, Inclusion & Ethical Design Innovation

Paper ID: 105

Designing Responsible Fashion Futures: Ethical Design Innovation and Circular Practices against Fast Fashion

Anshu Kumari

National Institute of Fashion Technology, Hyderabad

Fast fashion has transformed clothing production through rapid manufacturing and trend-driven consumption. While this system has made fashion widely accessible, it has also generated major environmental challenges including water pollution, textile waste, microplastic contamination, and rising carbon emissions.

This research examines the environmental impact of fashion production through industry experience, field observations in textile dyeing regions such as Balotra (Rajasthan), and practical sustainability experiments in clothing consumption.

The study highlights ethical design innovation, circular fashion systems, traditional clothing practices, and mindful consumption as possible alternatives. The findings suggest that responsible design, transparent supply chains, stronger environmental regulation, and consumer awareness can significantly reduce the environmental footprint of fashion.

Paper ID: 157

Overlooked Wallets: Financial Literacy and the Economic Empowerment of Women in Mumbai's Domestic Workforce.

Aarya Mundle¹, Archana Venkatachalam², Zoya Charania³, Ashish Yadav⁴

^{1,2,3,4} ISDI, Atlas SkillTech University

Despite government financial inclusion schemes, female domestic workers in urban India remain functionally excluded from the formal economy. The study argues that the barrier is communicational; current financial tools are designed for literate users, ignoring the mental models of the semi-literate workforce.

Through ethnographic fieldwork in Mumbai, the research identifies user personas who exercise disciplined saving habits through informal mechanisms but view formal banks as hostile. Synthesising these insights, the study proposes "Club Funda," a community-forward ecosystem design offering a formalised peer-savings club, a physical toolkit leveraging familiar semiotics, and gamified learning modules.

Paper ID: 85

Designing Cultural Accountability: REFRAME as a Systemic Intervention for Transgender Inclusion in Indian Cinema

Osho Jain¹, T. Moasunep Jamir²

^{1,2} Department of Fashion & Lifestyle Accessory Design, National Institute of Fashion Technology (NIFT) Shillong,

This study examines the systemic marginalization of transgender communities in India, focusing on the influential role of Bollywood cinema. By utilizing systems thinking and causal loop diagrams, the research identifies media representation as a critical leverage point for social change.

The paper proposes REFRAME, a voluntary certification framework designed to incentivize ethical, authentic, and multidimensional portrayals of gender diversity in Indian media.

Paper ID: 146

Last Bus Home: A Phenomenological Study of Gamified Social Bonding in First year students

Ann Treasa Joseph¹, Rikimi Madhukailly², Amit Deshmukh³

¹ Student, MDes , Communication design MIT Institute of Design, ADT University

² Associate Professor, Communication design MIT Institute of Design, ADT University, India

³ Associate Professor, Interior Space Design MIT Institute of Design, ADT University, India

This study evaluates the efficiency of a location-based board game, Last Bus Home developed by author. The game acts as a social lubricant for first year college students from diverse languages, cultural and physical appearances. The game involves going to a live location on campus and then playing the game. In this study, the primary objective is to analyse whether a board game under a controlled environment can facilitate social bonding and reduce initial social interaction friction. Prevalent social anxiety in the orientation period of a first-year student often determines how severely affected the student is going to be by homesickness.

This study employs a qualitative phenomenological approach, the data collected was analysed using thematic analysis. The researcher recruited a sample of 15 first-year students from different departments. After each game, a semi-structured interview was conducted reviewing their experience before and after the game. The questions involved factors involving their experience, their relationship with other players after the game and their involvement with the game throughout.

Paper ID: 63

Designing Belonging — Inclusive Fashion, Sustainable Innovation and Cultural Heritage in Contemporary Design

Anu Singh

Business Development, Multi-Designer Store- Eleganzaa by Melissa, Chennai

Keywords: Inclusive fashion, sustainable materials, cultural heritage, Madras checks, design innovation

This research explores how design innovation can address social inclusion, environmental sustainability, and cultural heritage through three design-led projects. The study investigates how fashion and product design can function as tools for responsible material practices and social awareness.

The first project, Nocturnal Fashion, develops expressive garments using reflective materials to support visibility and identity expression within LGBTQ+ nightlife environments. The second project proposes biodegradable menstrual packaging using jute as an alternative to plastic packaging. The third project reinterprets traditional Madras check patterns through contemporary leather handbags inspired by Tamil cultural aesthetics.

Using qualitative conceptual exploration and material experimentation, the research demonstrates how design practice can promote inclusive representation, sustainable materials, and cultural continuity.

Paper ID: 133

Rethinking the Front Row: Ergonomic and Inclusive Strategies for Cinema Seating Design

Anshi Singh¹, Ghanishtha Pahwa²

^{1,2}M.Des, NIFT Panchkula

Cinema halls aim to provide an immersive viewing experience, yet seating geometry often creates unequal visual comfort across different seating zones. Front rows are frequently considered undesirable due to steep viewing angles, excessive proximity to the screen, and physical discomfort during prolonged viewing.

This research examines the impact of screen-to-seat distance and vertical viewing angles on audience comfort. Through observational analysis and review of cinema design guidelines, the study identifies limitations in current seating layouts and highlights the need for more inclusive spatial planning. The findings aim to contribute to improved auditorium design that ensures equitable visual experiences for audiences across all seating zones.

Paper ID: 55

Designing Makerspaces as learning ecosystems: Integrating Craft, Technology and Youth Innovation in India

Akshara Karthi

Alumna, NIFT Chennai

In recent years, quite a few makerspaces have cropped up in India, which have been widely advertised promoting, youth innovation, skill development, easy access to cool tools, and technological entrepreneurship. Educational institutions, government initiatives, and private organizations have heavily invested in industrial grade machinery and tools to set up fabrication labs and makerspaces, assuming access to equipment such as laser engravers, CNC machines, 3D printers, woodworking tools, welding gear etc., will spontaneously bring about creativity, employability, and innovation culture among the youth.

However, emerging observations and evidence suggest that many makerspaces in India often focus on equipment access rather than learning ecosystems. This study examines the gap between the intended role of makerspaces as transformative learning environments and their current operational realities in India.

Paper ID: 62

Designing Sensory Inclusion in Intelligent Public Systems: Extending Universal Design for AI-Mediated Environments in India

Vidhi Bhabra

Alumna, MA Product Design, Manchester School of Art; Alumna, BDes Accessory Design,
NIFT, Mumbai

Keywords: Artificial Intelligence, Human–AI Interaction, Public Systems Design, Sensory Inclusion,
Universal Design

AI systems are increasingly embedded in India’s public infrastructure, shaping how citizens access services and interact with governance platforms.

This research examines these systems as sensory environments that structure participation through interaction pace, feedback behaviour, and behavioural expectations, proposing design principles for extending Universal Design in AI-mediated public systems.

Paper ID: 117

Dressing to Communicate: The Role of Cross-Dressing in Identity and Self-Expression

Shreya Dighe

Student, M.Des, MIT Institute of Design, Pune

The purpose of the study involved examining cross-dressing in Indian society and the social contexts in which it is accepted. Significant prejudice persists toward men cross-dressing in silhouettes typically considered female. Many portrayals in Indian cinema still rely on historical tropes of humour and tragedy, while the retail fashion system continues to struggle with true inclusivity in design and accessibility.

A review of literature explored previous studies in this field, covering cross-dressing in historical theatre and performance, and contemporary experiences of queer audiences with clothing. The findings reported that “cross-dressing” is not driven by a single motive or tied to any sexual orientation, but is a nuanced and complex practice long embedded in social structures, with its definition evolving alongside changing social contexts and worldviews.

Paper ID: 50

Rehabilitation of Slum Artisans through Livelihood and Cultural Continuity: A Case of Kathputli Nagar, Jaipur

Deepa Borawar¹, Gireendra Kumar²

¹Bachelor of Architecture Student, Department of Architecture and Planning, Malaviya National Institute of Technology, Jaipur, India

²Assistant Professor, Department of Architecture and Planning, Malaviya National Institute of Technology, Jaipur, India

A large population of India resides in urban slums due to various reasons. Slum communities play a crucial role in the functioning of the city. However, the slum dwellers continue to live in hazardous living conditions. The urban poor faces many daily challenges. Their challenges highlight the need to re-imagine urban environments to better accommodate and sustain the lives of the urban poor.

The study critically examines the livelihood of urban slums, artisan art communities within the settlements, various challenges faced by the slum dwellers, the gap between government policies and the role of community-led initiatives for the growth of slum communities. The traditional slum rehabilitation model often focuses on housing only, neglecting the livelihood of the residents. This paper takes the case of Kathputli Nagar, Jaipur and reveals how a livelihood integrated slum rehabilitation model can uplift the lives of the marginalized artisan community through inclusive design strategies. The research highlights the need of community participation, social integration, vocational training programme and cultural preservation in the slum rehabilitation process for livelihood and cultural continuity.

Paper ID: 18

Fashion, Lifestyle Choices, and Social Status in Urban Chennai: An Analysis through Veblen's Theory of Conspicuous Consumption

Ureka R

Student, Department of Fashion Design and Simats Technological Unison of Design Innovation
Outreach, Saveetha Institute of Medical and Technical Sciences, Chennai

Fashion & Status in Chennai: This study explores how urban Chennai residents use fashion to signal social status, applying Veblen's (1899) theory of conspicuous consumption where luxury displays hierarchy. A Google Forms survey (n>40) examined preferences, status beliefs, and buying patterns.

Key Findings:

60% see clothing as a major status marker and 80% link fashion to class, yet 77.5% rarely buy luxury - favoring affordable options for subtle, practical signaling over extravagance.

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राष्ट्रीय फैशन प्रौद्योगिकी संस्थान, चेन्नै
National Institute of Fashion Technology, Chennai

Ministry of Textiles, Government of India

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contact@niftcmoyasic.in

www.niftcmoyasic.in

9707 7071