



Senses & Sensibility '25

From natural to artificial intelligence
in Design?? *****

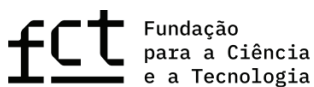
NOVEMBER 24th - 28th 2025

Abstract Book

<https://www.ufrgs.br/ldci/senses-and-sensibility-2025/>

PORTO ALEGRE - BRAZIL

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Senses & Sensibility '25

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in Design???

Organization

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Victor Dutra (PUCRS) – Undergraduate student

The theme of S&S'25, “**From Natural Intelligence to Artificial Intelligence in Design**,” was inspired by a question posed by the English researcher Nigel Cross in one of his articles on cognition in design:

Can a machine design?

Let me finally turn from understanding how human designers think, from natural intelligence in design to artificial intelligence in design: from how humans think to how machines might think. (CROSS, 1999)

Around this theme, six thematic axes have been defined, which intersect with AI:

The first thematic axis is **Design and Technological Challenges**. Artificial Intelligence itself is a technological challenge to be understood and effectively used by designers. However, it also brings numerous possibilities for designers to face the challenges intrinsic to the evolution of other technological fields, which, in one way or another, will become part of the everyday experience of ordinary people in the coming years.

The second thematic axis, **Design, Culture, and Diversity**, was conceived from the perception of the risks and benefits AI can bring to these dimensions for people. The risk of exacerbating cultural impoverishment, perceived in some countries due to poor-quality education, can be offset by the possibilities of accessing cultural experiences, such as collections of collective memories.

The thematic axis **Design for Health and Well-being** proposes a space for presenting research on how design can use AI to contribute to improving people's quality of life. Like the others, this axis involves the intersection of multiple disciplines, with the role of design being the humanizer of technological solutions.

The thematic axis **Design for Social Innovation and Sustainability** brings the proposal to discuss how AI can contribute to the social, economic, and environmental dimensions of sustainable development. Issues such as unemployment and job retraining may be addressed by design solutions that were previously unfeasible before the advent of AI. Research in design in this regard could bring a renewal in life expectations for many people.

The thematic axis **Design and Entrepreneurship** could serve as a platform for the articulation of topics also present in the other thematic axes. The “animal spirit” present in the most visionary designers is the same that drives the minds and hearts of entrepreneurs who have transformed the world through centuries of innovations based on science and technology.

The thematic axis **Design and Education** provides a space for discussing how AI is beginning to transform education in design and how design can leverage AI to contribute to the improvement of general education.

SENSES & SENSIBILITY 2025 - Conference Schedule

Date / Time	November 24, 2025	November 25, 2025	Date / Time	November 26, 2025	November 27, 2025	November 28, 2025
Morning Manhã						
8:30 – 10:30	Online Thematic Session 1 Sessão temática online 1	Online Thematic Session 3 Sessão temática online 3	8:30 – 9:00	Opening Abertura	Networking	Visits Visitas 1 Tecnopuc 2 Museums at the Historical Center Museus no Centro Histórico
			9:00	Lecture 1 Palestra 1 David Ochi	Lecture 4 Palestra 4 Paulete Schwetz	
			10:00 – 10:30	Coffee Break	Coffee Break	
			10:30	Lecture 2 Palestra 2 Angélica Ponzio	Lecture 5 Palestra 5 Ana Cecília Nunes	
			11:30	Lecture 3 Palestra 3 Rodrigo Dalla Vecchia	Lecture 6 Palestra 6 Stella Lisboa Sapper	
12:30 – 14:30	Online Thematic Session 2 Sessão temática online 2	Online Thematic Session 4 Sessão temática online 4	12:30 – 14:30	Lunchtime & Networking Almoço e integração	Lunchtime & Networking Almoço e integração	Lunchtime & Networking Almoço e integração
Afternoon Tarde						
14:30 – 18:00	In-person Workshops Oficinas presenciais 1 - 3	In-person Workshops Oficinas presenciais 4 - 6	14:30 – 16:30	In-person Thematic Sessions Sessões temáticas presencias 1 - 2	In-person Thematic Sessions Sessões temáticas presencias 3 - 4	Roundtable
			15:30 – 16:00	Coffee Break	Coffee Break	Coffee Break
			17:00 – 18:00	Company Cases Casos de empresas	Company Cases Casos de empresas	Official Closing Encerramento
Evening Entardecer						
						Happy Hour

Conference venues

Lectures / Palestras 1 - 2 - 3 - 4 - 5 - 6



Local: Arena South Summit - Tecnopuc

In-person Thematic Sessions / Sessões temáticas presenciais 1 - 2

In-person Thematic Sessions / Sessões temáticas presenciais 3 - 4

In-person Workshops Oficinas presenciais 1 - 3

In-person Workshops / Oficinas presenciais 4 - 6



Local: FAMECOS - Prédio 7 - PUCRS

Pontifícia Universidade Católica do Rio Grande do Sul (PUCRS)

Av. Ipiranga, 6681 - Partenon, Porto Alegre - RS

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NOVEMBER **24th - 28th** 2025

November 24th

Online 1
Presentation in English
8:30 to 10:30

Rúben Guilherme (University of Beira Interior),
Eulerson Rodrigues (University of Beira Interior and IADE Universidade Europeia)
and Ernesto Filgueiras (University of Beira Interior)

Representing cultural heritage in commercial games: a preliminary study

Abstract. “Video games have emerged as powerful tools for learning and cultural engagement. While recent research has explored the use of educational and serious games for the transmission of cultural heritage, commercial games—due to their broader reach and popularity—hold significant potential in this domain. This paper presents a preliminary analysis of four commercial video games with diverse cultural contexts, examining how each title integrates cultural heritage through specific game design strategies. From this analysis, we propose an initial set of techniques used to convey cultural information to players. This set serves as a foundation for future research aiming to evaluate the effectiveness and applicability of these strategies in promoting both tangible and intangible aspects of cultural heritage within entertainment-focused game environments.”

Keywords: cultural heritage, game design, commercial games and cultural representation

Ana Espada (Instituto Superior Técnico da Universidade de Lisboa (IST)), Isabel Farinha (Faculdade de Tecnologia de Setúbal do Instituto Politécnico de Setúbal (EST/IPS)) and Gabriel Pestana (Faculdade de Tecnologia de Setúbal do Instituto Politécnico de Setúbal (EST/IPS)).

From tool to co-agent: reframing ai as a co-worker in design ideation.

Abstract. Artificial Intelligence (AI) has rapidly entered the realm of Design education and practice. Yet, its role is still predominantly framed within the logic of the tool: a passive assistant that executes human commands and accelerates efficiency. While this perspective has facilitated integration into curricula and professional studios, it narrows the horizon of what AI can contribute to creativity, knowledge production, and institutional transformation. This paper proposes a paradigm shift by positioning AI not as a tool, but as a co-worker in design ideation. Drawing on posthuman theory, more-than-human Design, and recent experimental studies at TU Delft and Politecnico di Milano, we articulate three roles for AI: provocateur, synthesiser, and cartographer. These roles enable AI to challenge assumptions, consolidate fragmented contributions, and map emergent design ecologies, thus expanding ideation beyond anthropocentric models. We then present a pilot methodology for testing this reframing in classroom settings, contrasting AI-as-Tool with AI-as-Co-Worker in design tasks. By embedding AI as a co-worker, design education becomes a laboratory for posthuman institutions, where students cultivate agency literacy and learn to negotiate creativity, authorship, and ethics with non-human intelligences.

Keywords: Design Education, Co agency, Ideation, Posthumanism, Service Design Thinking

Roberto Tietzmann (Pontifical Catholic University of Rio Grande do Sul), Tais de Barros (Pontifical Catholic University of Rio Grande do Sul) and Marcelo Augusto Coelho Carvalho (Pontifical Catholic University of Rio Grande do Sul).

Prototyping a film analysis tool for classroom use with Google AI Studio.

Abstract. This short paper introduces a prototype subtitle analysis tool developed using Google AI Studio for classroom use in film studies. Traditionally, film analysis has relied on interpretation, but this tool aims to provide a more precise, data-driven approach. It supports both material preparation and analytical processes in filmmaking education, helping students and teachers delve deeper into film and television series. The tool's design process, inspired by the DADI (Definition, Architecture, Design, Implementation) model, is discussed, highlighting how AI blurs the lines between these stages. The subtitle analyzer focuses on the verbal dimension of film, complementing visual analysis by extracting narrative and thematic patterns from dialogue. It processes subtitle files to provide quantitative metrics (e.g., word count, average sentence length) and qualitative AI-powered interpretations, including plot summaries, theme identification, and sentiment analysis. The tool also generates semantic graphs of characters and themes, and visualizes subtitle density over time. While acknowledging its early stage and reliance on subtitle quality, the project positions the analyzer as a complementary methodological experiment rather than a replacement for traditional approaches.

Keywords: film studies, artificial intelligence, subtitles, analysis

Alexandre Guerreiro (Universidade de Aveiro)
and Afonso Borges (Universidade de Aveiro).

Design as curation in the age of AI.

Abstract. The generative capabilities of Artificial Intelligence (AI) are showing plausible applications for design practices, changing workflows. This paper explores AI's role as a co-creator that, by generating content, positions the designer as a curator of outputs and less of a direct giver. In industrial design, the early stages of ideation have traditionally relied on exploratory methods. For that purpose, the designer needs tools to externalize and communicate ideas. For a long time, sketching has been the most prominent of these methods. Such tools depend on the designer's constant interaction to display information. The rise of generative AI (GEN AI) unsettles this foundation. The use of models such as Generative Adversarial Networks (GANs) and diffusion systems can offer the designer a different way from established ideation practices by producing content directly from natural language prompts. Instead of iterative sketching or modelling, designers are now confronted with this seemingly creative generative machine. Within such workflows, the designer's role shifts: rather than authoring representations, they engage in curating, framing, and selecting among machine outputs. Creativity in design may become less an act of making and more an act of judgment. This paper positions design-as-curation as a defining paradigm in the present era of GEN AI. Drawing on Flusser's (2000) notion of the "functionary" and Galanter's (2003) account of systemic creativity, it argues that authorship is not lost but can be considered redistributed. The reliance on this method transforms the creative process into a form of contextualizing and curating meaning of auto-mated abundance.

Keywords: Artificial Intelligence, Design, Industrial Design, Generative AI

The role of the designer in the age of AI.

Abstract. This article examines how the constant presence of technology, while intertwined with social changes that revive and reshape tools, is not solely responsible for the undervalued status designers face today. The struggle for professional recognition, regulation, and validation of intellectual activity—and its role in addressing social issues—is longstanding. However, the easy access to AI has been reinforcing the notion of a fast-food design process, distorting the role of design as a field of knowledge. To explore this issue, some documents are analyzed in light of historical national movements, along with a brief mapping of the market in this field, including expected qualifications, financial returns, and sources of income. In doing so, the article highlights the other side of technological democratization: the risk of erasing the value of qualified education and the methodological rigor demanded by academic training, as well as the insights that can only emerge from physical, human interaction. After all, every instance of machine learning begins with a human mind.

Keywords: Artificial Intelligence, Professional design, Technological challenges

Patricia Igino Borges (PUC-RJ), Claudio Freitas de Magalhães (PUC-RJ)
and Carlos Eduardo Felix da Costa (PUC-RJ).

Aesthetic parallels between futurist art and AI-generated imagery.

Abstract. This article explores the aesthetic parallels between Futurist art and AI-generated imagery. It begins with Jean François Lyotard's "The Bias of the Figural" and examines the 1968 MoMA exhibition "The Machine as Seen at the End of the Mechanical Age." The study highlights how both Futurism and generative art challenge traditional concepts of aesthetics, authorship, and experience. Futurism celebrated technological innovation and societal transformation, while AI generative art redefines these concepts through human-machine collaboration. The article discusses the implications of AI in art, emphasizing the post-human aesthetic that integrates processes, interactions, and unpredictability.

Keywords: Futurism, Generative IA, Lyotard

Verónica Silva (UNIDCOM/IADE), Hande Ayanoglu (UNIDCOM/IADE) and Rodrigo Hernández-Ramírez (The University of Sidney).

AI-Last designer: escaping tech hype to recenter HCD .

Abstract. The latest wave of innovation in artificial intelligence, particularly in generative AI, has made advanced tools widely accessible, transforming the way design is practiced and discussed. However, the rapid enthusiasm for what some call AI-first design has led to an exaggerated response within the industry. Many practitioners and organizations are attempting to restructure design processes around AI, positioning technology as the driving force rather than as a supporting tool. This approach represents a fundamental misunderstanding of design's purpose. Design, at its core, is a human-centered discipline that seeks to understand and respond to user needs, not to serve technological trends or commercial hype. While it is undeniable that design evolves alongside technological development, displacing the user in favor of efficiency or novelty undermines the ethical and social dimensions of the field. In this position paper, we encourage designers, educators, and researchers to resist the temptation to center the process on machines and instead reaffirm our responsibility to create thoughtful, inclusive, and sustainable solutions that genuinely improve human experience, rather than chasing the next profitable wave.

Keywords: Generative Artificial Intelligence, AI in Design, Human-Centered Design, Design Ethics



NOVEMBER **24th - 28th** 2025

November **24th**

Online 2

Presentation in Portuguese

12:30 to 14:30

Taís de Barros (PUCRS), Marcelo Augusto Coelho Carvalho (PUCRS)
and Roberto Tietzmann (PUCRS).

Animating by prompt: the challenges of generative ai for animation through an experiment with the short film Amores (2021).

Abstract. This research investigates the possibilities and limitations of Generative Artificial Intelligence (GAI) in the design of animated characters and settings, conducting a comparative study between traditional methods and AI-assisted processes, using the Brazilian stop-motion short film *Amores* (2021) as a case study. Using the short film's original conception—its script, storyboard, and visual references—as a foundation, experiments were conducted with the Nano Banana model (Google Gemini), focusing on generating characters at different ages and settings that required sequential coherence and adherence to the cut-out aesthetic. The results reveal a fundamental dichotomy: on one hand, the AI proved exceptionally efficient in generating unique static images and accelerating workflows; on the other hand, maintaining visual continuity across a sequence of images—a pillar of animated narrative—proved to be a significant obstacle, with recurring inconsistencies in setting elements and characterization. It is concluded that, while GAIs represent a powerful tool for optimization and ideation, their use for creating cohesive and sequential visual universes still requires intensive human supervision, facing challenges that distance it from autonomous application in professional pipelines.

Keywords: generative artificial intelligence, animation, design, concept art

André Pais (University of Beira Interior), Eulerson Rodrigues (iA* Investigação em Artes at University of Beira Interior | IADE Universidade Europeia) and Ernesto Filgueiras (University of Beira Interior | CIAUD).

Preliminary study on ethical and psychological aspects of monetization in commercial video games.

Abstract. Video games have increasingly integrated monetization mechanisms such as microtransactions, subscriptions, pay-to-win features, and loot boxes, raising ethical and psychological concerns. This preliminary study, part of a Master's research project in game development, reviews existing literature to explore the psychological risks and ethical challenges associated with these monetization models. Emphasis is placed on their gambling-like characteristics, potential to foster addictive behaviors, and the vulnerability of younger players. Legal and regulatory responses from various jurisdictions are discussed, alongside examples of predatory monetization in popular games. The study highlights the urgent need for responsible design practices, interdisciplinary research, and harmonized regulations to protect player well-being while supporting industry sustainability.

Keywords: Video game monetization, Predatory design, Loot boxes, Behavioral addiction, Game ethics, Player well-being, Regulatory frameworks

Design and development of an intelligent low-cost 3D-printed distal upper limb prosthesis.

Abstract. Abstract: This study presents the conception, design, and development of an active distal upper limb prosthesis manufactured through 3D printing, aiming to restore functionality lost due to upper limb amputation, a condition affecting a significant portion of the Brazilian population. Developing prostheses that recover functionality while minimizing energy expenditure is essential to improve quality of life for affected individuals. This requires a multidisciplinary approach integrating physiology, materials engineering, electronics, and ergonomics to meet user needs. The prototype architecture allows testing of different materials and control technologies, and comparison with typically passive prostheses provided by public agencies. Structures were printed in polylactic acid (PLA) for its low cost, ease of printing, biocompatibility, and suitable mechanical properties. Preliminary results demonstrate a functional active hand and forearm prosthesis, proving the feasibility of low-cost devices that optimize movement efficiency. Designing and developing such prostheses demands comprehensive knowledge of functional anatomy, ergonomics, electronics, and material properties, alongside teamwork across multiple disciplines. These findings provide insights for creating accessible, functional prosthetic devices that recover lost abilities and reduce user effort, contributing to improved quality of life for distal upper limb amputees.

Keywords: Design., Assistive Technology., Active Prosthesis.

***Design and digital transformation in health systems:
a physical-digital ecosystem model to support
pharmacotherapy adherence.***

Abstract. Low adherence to pharmacotherapy constitutes a global public health challenge with significant implications for treatment effectiveness and the sustainability of health systems. Digital transformation strategies can support smart and personalized services, optimize processes, reduce costs, and increase the productivity of health systems. However, patient adherence to healthcare depends on human-centered services that meet patient needs. This article presents an exploratory study on the role of human-centered design in promoting pharmacotherapy adherence in a context of digital transformation. The work contributes with a conceptual analysis and discussion of pharmacotherapy adherence, digital transformation in health systems, the importance of human-centered strategies in healthcare, and the contribution of human-centered design to supporting pharmacotherapy adherence. The work also explores digital transformation scenarios in pharmacotherapy and proposes a model of a physical-digital ecosystem, centered on people and supported by intelligent systems, to support pharmacotherapy adherence, pointing to guidelines for the design of future solutions that integrate digital technologies to support healthcare treatment.

Keywords: pharmacotherapy adherence, digital transformation in healthcare, human-centered design

Track: DESIGN FOR SOCIAL INNOVATION AND SUSTAINABILITY

Carlos A. M. Duarte (IADE - Universidade Europeia/ UNIDCOM/IADE), Isabel Farinha (Escola Superior de Tecnologia de Setúbal - Instituto Politécnico de Setúbal/ UNIDCOM/IADE) and Gabriel Pestana (Escola Superior de Tecnologia de Setúbal - Instituto Politécnico de Setúbal/ UNIDCOM/IADE).

Social innovation and community-centred design: co-creation of solutions for the re-use of end-of-life fishing nets and gear.

Abstract. This article explores the potential of applying social innovation strategies as an approach focused on two fishing communities on the Portuguese coast. It presents a case study based on a solution for the Blue Economy, as a collaborative service design proposal called 'BCpbP - Blue Circular PostBranding Project', with the aim of transforming end-of-life fishing nets and gear into something new and valuable, capable of promoting conscious and globally sustainable consumption by mobilising public entities, NGOs, companies and citizens. Based on various evidence, a social innovation model is presented, describing the processes established for the various partnerships and relationships among entities, as well as the importance of design as a strategic tool, namely for establishing a business model. To this end, a methodology based on a systemic, multi-disciplinary, and collaborative approach was adopted, with the following objectives: the selective collection of marine waste and fishing nets; the management of a digital chain of custody; the transformation of waste into raw materials for new design products; and the dissemination of eco-design practices, communication, and awareness-raising. Finally, as a principal result, BCpbP was recognized in Portugal with the "SDG 14 – Protect Marine Life Award" (2023) - by the Portuguese Association of Business Ethics (APEE) in the field of social responsibility and sustainability practices and by the "BlueInvest Readiness Assistance" program - a European Commission support program for blue economy initiatives.

Keywords: sustainable design, social innovation, service design, blue economy, fishing networks and arts (DFG)

From natural to “Historical Intelligence”: revisiting the origins of design through the lens of álvaro vieira pinto’s philosophy of technology

Abstract. The present article aims to critically analyze the argument defended by some Design Theory authors that the origins of Design lie in pre-industrial societies. It addresses whether the concept of “natural intelligence in Design”, as presented by Nigel Cross, is valid or not, especially considering recent discussions regarding Artificial Intelligence (AI). Our methodology includes first a brief literature review of some Design author’s theories regarding the genesis of the practice. Then, we delve into the philosophy of technology of Álvaro Vieira Pinto, emphasizing especially the author’s notion of technique, and use it to critically examine the previously mentioned theories and arguments. Our findings suggest that Design should be understood as a historically situated labor activity rather than an innate human ability. We hope that, by looking into examples of the past, we can provide a satisfactory framework to investigate current issues and even rethink the impact of AI on contemporary design practice.

Keywords: design theory, design origins, philosophy of technology, Álvaro Vieira Pinto and artificial intelligence



NOVEMBER **24th - 28th** 2025

November 25th

Online 3

Presentation in Portuguese

8:30 to 10:30

Amanda Oliveira (UNIDCOM/IADE, Unidade de Investigação em Design e Comunicação), Rodrigo Hernandez-Ramirez (Sydney School of Architecture, Design and Planning) and Hande Ayanoglu (UNIDCOM/IADE, Unidade de Investigação em Design e Comunicação).

Speculative design for workplace futures: fictional personas and narratives assisted by generative AI.

Abstract. This study investigates the integration of Generative AI (GenAI) as a co-creative instrument within participatory speculative design, examining how it can foster equity-oriented reflections on the future of work. The research draws on an in-person workshop held in Lisbon (Portugal) focused on exploring gender equity and inclusion within technological and innovation ecosystems. The objective of this paper is to present the results of this Design Fiction workshop, demonstrating how GenAI can be seamlessly integrated into Speculative Design methodologies to drive critical reflections. GenAI was embedded at two pivotal moments: first, in the generation of visual persona representations that acted as catalysts for empathy and engagement; and second, in the co-development of narrative texts, supporting participants in articulating how their personas might coexist and negotiate values within imagined futures. Findings indicate that GenAI can enhance collective imagination and ethical deliberation, enabling participants to question dominant narratives surrounding work, labor, and identity while envisioning alternative, inclusive futures. This paper contributes to the growing field of critical and participatory AI, demonstrating how design fiction workshops can democratize foresight practices and provide tangible pathways toward more just and inclusive technological futures

Keywords: Speculative Design, Design Fiction, Generative AI (GenAI), Workplace Futures, Design Justice

Isabela Moroni (Federal University of Pernambuco (UFPE)), Amilton Arruda (Federal University of Pernambuco (UFPE)) and Elton Lima (University of Lisbon (ULISBOA)).

AI x Biomimetics: Convergence and opportunities.

Abstract. This article examines the conceptual and methodological convergences between Artificial Intelligence (AI) and Biomimicry, exploring how the combination of computational capabilities and nature-inspired principles can enhance the development of innovative, sustainable, and regenerative design solutions. Drawing on a literature review and case studies published between 2016 and 2025, the study identifies multiple roles that AI can play in biomimetic design such as creative partner, cognitive translator, morphological fusion agent, and emotional sensor and analyzes their interdependence within auditable and traceable design ecosystems. The integration of AI and Biomimicry is discussed in terms of opportunities including the expansion of collective intelligence, scalability of biomimetic solutions, physical-digital fusion, the creation of new business models, and the democratization of access. The analysis also highlights the need for robust governance, ethical safeguards, and the preservation of human judgment to mitigate risks such as superficial formalism, algorithmic bias, and extractive exploitation of natural systems. The originality of this research lies in proposing a unified theoretical-methodological framework that integrates epistemological, ethical, technical, and experiential dimensions into an auditable design ecosystem. It advances the field by introducing a novel functional categorization of AI in biomimetic design, integrating Dicks (2023) dimensions into AI-assisted design logic, structuring traceable workflows for transparency and governance, reinterpreting diverse case studies within a single conceptual model, and expanding the scope of biomimicry beyond form and function to incorporate emotional responsiveness and regenerative sustainability. This contribution provides both the scientific and professional communities with an original conceptual and methodological foundation for exploring hybrid intelligence (human-artificial-natural) in a responsible, creative, and scalable manner.

Keywords: Artificial Intelligence, Biomimetics, Generative Models, Sustainability

Juliana Krupahtz (Universidade Federal do Rio Grande do Sul),
Vitor Artur Heisler dos Santos (Universidade Federal do Rio Grande do Sul),
Fabiano Scherer (Universidade Federal do Rio Grande do Sul),
Eduardo Cardoso (Universidade Federal do Rio Grande do Sul)
and Léia Miotto Bruscatto (Universidade Federal do Rio Grande do Sul).

Handoff: mapping developers' perceptions and needs regarding communication and design delivery documentation.

Abstract. The handoff process, which marks the transition from design to development in digital interface projects, remains a critical stage that often encounters challenges such as lack of standardization and ineffective communication. These obstacles may compromise both the quality of the final product and the efficiency of development. This study aimed to investigate developers' perceptions and needs regarding communication and documentation during handoff, employing two user-centered research techniques: focus group and survey. The focus group was conducted with a front-end development team in a financial-sector company, while the survey reached developers from different contexts, thus broadening the analysis. Data collection focused on understanding how documentation and tools such as Figma influence handoff practices and outcomes. Results revealed that although documentation is valued, its absence of clarity and consistency continues to hinder collaboration. Developers emphasized the importance of elements such as error states, loading and empty states, complete user flows, and textual specifications, which emerged as essential anchors for improving documentation. Insights also highlighted the need for practical measures, including the integration of error scenarios into main flows, the organization and naming of files in Figma, and the creation of a best practices guide for documentation. By integrating these perspectives, the study contributes to bridging gaps between designers and developers, reinforcing handoff as a collaborative and communicational challenge. Limitations include the restricted sample in the focus group and the low response rate in the survey, which reduce the generalizability of results. Nevertheless, the findings provide concrete recommendations for enhancing design handoff practices and suggest directions for future research that may explore the role of emerging technologies, such as artificial intelligence, in automating and improving documentation.

Keywords: design handoff, design documentation, communication in design, user-centered design, interface design

Bianca B. Pereira (Universidade Federal do Rio de Janeiro), Madalena R. Grimaldi (Universidade Federal do Rio de Janeiro), Fabiana O. Heinrich (Universidade Federal do Rio de Janeiro) and Clorisval G. Pereira Jr. (Universidade Federal do Rio de Janeiro).

Who shapes tomorrow? Extended reality, innovation ecosystems and future narratives.

Abstract. This paper examines the interaction between Innovation Ecosystems and future narratives that emerge around new technologies, borrowing on the perspective of Speculative Design. It focuses on the prevailing discourses surrounding Extended Reality (XR) and investigates how these are influenced by the increasingly corporate-led innovation systems responsible for its development. The analysis highlights a pattern where innovations originated from private and public collaborative systems are often captured and directed by major tech corporations and argues that this dynamic shape future discourses in ways that prioritize corporate interests over collective societal demands. The study explores the ambivalent promises associated with XR, ranging from cultural democratization and heritage preservation to risks of sensory overload and data exploitation, and how they came to be through its development. By employing Speculative Design methodology, it envisions and proposes how we can actively construct preferable futures that realign XR to be leveraged to generate socially beneficial outcomes.

Keywords: Innovation, Speculative Design, Emerging technologies, Innovation Ecosystems, Extended Reality

Silvestre Linhares da Silva (UnB), Ricardo Ramos Fragelli (UnB), Ana Claudia Maynardes (UnB) and Andrea Cristina dos Santos (UnB).

Semiotic topodynamics: a two-level architecture for semantic AI.

Abstract. This article proposes a theoretical architecture named Semiotic Topodynamics to provide explainability and governance for semantic processing in Artificial Intelligence (AI) systems. Grounded in Peirce's triadic semiotics and Lotman's semiosphere theory, the architecture is structured in two levels: (1) a geometric level, where signs, objects, and interpretants are modeled as oriented 2-simplices, forming a simplicial complex that preserves native triadic relations; and (2) a dynamic level, where Discrete Exterior Calculus operators and the Hodge decomposition define intrinsic meaning trajectories, Anchorage (Ω), Flow, and Obstruction, complemented by Deformation and Bifurcation operators for contextual transitions. A study using the concept "HOUSE" illustrates the application, demonstrating how edges, formalized as sheaves, regulate semiotic translation between layers. It is concluded that the separation between form and process offers auditable levers for the design of semantic AI, replacing opaque parameters with explainable geometric control and enabling gradual levels of human-machine autonomy.

Keywords: Semiotics, Hypergraphs Simplicial, Complexes, Semantic Artificial Intelligence, Topodynamics

Tarsus Magnus Pinheiro (Universidade do Estado do Rio de Janeiro (UERJ)),
André Ribeiro de Oliveira (Universidade do Estado do Rio de Janeiro (UERJ)),
Dércio Santiago da Silva Jr (Universidade do Estado do Rio de Janeiro (UERJ)),
Almir Mirabeau (Universidade do Estado do Rio de Janeiro (UERJ))
and Sydney Freitas (Universidade do Estado do Rio de Janeiro (UERJ)).

User-centered design in the development of digital products for web portals: an exploratory study of the IBGE website team.

Abstract. This article presents a qualitative study conducted with professionals from the Internet Portal of the Brazilian Institute of Geography and Statistics (IBGE), aiming to understand the application of User-Centered Design (UCD) methods in the creation and development of digital products for government portals. Based on semi-structured interviews, the study examined the team's level of knowledge regarding user profiles, work processes, and the factors that influence the success of user-focused projects. The results revealed a significant awareness among professionals about the relevance of UCD principles in design and development activities. However, challenges persist concerning the segmentation of user profiles, the systematic incorporation of user research into project workflows, and the active participation of internal stakeholders in the design process. The research also identified the existence of extensive tacit knowledge within the team, highlighting the need for more structured knowledge management practices. Overall, the findings indicate that there is substantial room for methodological and organizational maturity within the institution, creating favorable conditions for enhancing design processes and optimizing the development of digital products and services.

Keywords: user-centered design, information design, web design, adaptive interfaces, intelligent user interfaces

Danilo Carlos Siqueira (Universidade Estadual Paulista (UNESP))
and Cristina Portugal (Universidade Estadual Paulista (UNESP)).

From user-centered to intelligent agency: rethinking interaction design practice and foundations.

Abstract. This article discusses the conceptual and methodological transformations in the field of Interaction Design in light of the advancement of artificial intelligence and the emergence of autonomous computing agencies. Based on a critical literature review, it analyzes how the user-centered paradigm becomes insufficient in digital ecosystems characterized by adaptivity and unpredictability. It argues that Design assumes a strategic role as an interdisciplinary mediator between human and technical knowledge, called upon to redefine its epistemological and design foundations to respond to the complexity of a multi-agency technological ecology.

Keywords: Distributed Agency, Interaction Design, Artificial Intelligence, Design Paradigm, Design Practice



NOVEMBER **24th - 28th** 2025

November 25th

Online 4

Presentation in Portuguese

12:30 to 14:30

Thaynã Mariano Costa (UFSC) and Luiz Salomão Ribas Gomez (UFSC).

Engagement and translation: the role of gamification in the business DNA definition process.

Abstract. In the context of digital platforms for entrepreneurship, this article analyzes a central design challenge: guiding users in defining their “Business DNA.” The study frames this process as an act of intersemiotic translation, in which entrepreneurs convert abstract values and purposes into concrete strategic artifacts. However, the complex nature of this translation journey represents a barrier to engagement, requiring design solutions that sustain user motivation. In this regard, the article discusses gamification as the primary strategy employed to generate the necessary engagement throughout this path. It is argued that game mechanisms, such as point systems, progression, narratives, and rewards, function as a crucial motivational layer that enables the entrepreneur’s translation journey. Based on a theoretical review and the analysis of different development platforms, the discussion explores how each game element contributes to the experience. It is concluded that gamification, when viewed from this perspective, reveals itself as a powerful tool for the field of Design and Entrepreneurship, allowing for the creation of more effective and significant experiences in the formation of new businesses.

Keywords: Gamification, Business DNA, Intersemiotic Translation, Digital Platforms

Alexandre Kieling (Universidade Católica de Brasília (UCB)), Florence Dravet (Universidade Católica de Brasília (UCB)) and Leandro Bessa (Universidade Católica de Brasília (UCB)).

The dynamic circles of creative economy: a methodological model developed from design metaproject and complex thinking.

Abstract. This article presents the theoretical and methodological foundations that guided the formulation of the Dynamic Circles of the Creative Economy, a model developed based on Edgar Morin's complex thinking and metaproject practices in design. It proposes a framework that seeks to reconfigure the understanding of the Creative Economy as a living, dynamic, and interdependent system, surpassing the static perspective of Throsby's (2008) concentric circles. The study is situated within the field of systemic design and proposes an approach that integrates culture, technology, and innovation, using design and complexity as the epistemological and methodological framework for mapping living and creative ecosystems. The objective is to demonstrate how the Dynamic Circles framework serves as a theoretical-methodological tool for analysis, understanding, and planning, applicable both to academic studies and to public policies for creative development

Keywords: Creative Economy, Complex Thinking, Design, Metaproject, Dynamic Circles

Fernanda Aparecida da Silva (UFRGS), Susana Rocha Costa (UFRGS), Eduardo Rocha Costa (UFRGS), Júlio Carlos de Souza van der Linden (UFRGS) and Fabiano de Vargas Scherer (UFRGS).

User-centered design and artificial intelligence in healthcare: a systematic review of recent scientific production.

Abstract. This study aimed to identify, analyze, and synthesize recent scientific production on the application of User-Centered Design (UCD) in the development of Artificial Intelligence (AI) solutions in healthcare, highlighting patterns, challenges, and strategies to enhance usability and acceptance of these technologies. Method: A systematic literature review was conducted in accordance with the PRISMA 2020 protocol. The research question was structured using the PICO model, focusing on technological solutions in healthcare that applied UCD. Articles published between January 2023 and May 2025 in Portuguese, English, or Spanish were included, retrieved from PubMed, Scopus, Web of Science, IEEE Xplore, and SciELO. The selection process followed the stages of screening, eligibility, and inclusion, culminating in the analysis of 46 studies. Results: The analyzed studies revealed the predominance of qualitative and mixed methodologies, with extensive use of interviews and co-design, underscoring the importance of active user involvement. Artificial Neural Networks were most frequently applied in diagnostics and prognostics, alongside the growing incorporation of Generative AI in clinical records. The most recurrent phases were design and evaluation, with emphasis on iterative prototyping. Application areas ranged from surgical oncology to mental health, nursing education, and healthcare professional well-being. Reported benefits included solution personalization, process optimization, and greater acceptance by patients and professionals. However, barriers persist, such as the absence of standardized methodologies, limited resources, and ethical concerns regarding privacy and equity. Conclusion: The integration of AI in healthcare, when guided by UCD and Human-Centered Design principles, fosters more effective, safe, and user-friendly solutions. The literature highlights the need for greater methodological standardization, stronger interdisciplinarity, and deeper investigation of ethical and multicultural impacts. Future research is encouraged to explore hybrid methodologies, validate systems in diverse contexts, and expand the focus on longitudinal studies to assess clinical outcomes and user experience.

Keywords: User-Centered Design, Artificial Intelligence, Healthcare, Systematic Review, Usability

Technology use in supporting the learning processes of children with adhd: a scoping review.

Abstract. This scoping review analyses the use of digital technologies to support learning in children with Attention-Deficit/Hyperactivity Disorder (ADHD) symptoms. ADHD is a neurodevelopmental disorder characterised by inattention, impulsivity, and hyperactivity. Recognising ADHD's impact on executive functions such as working memory and inhibitory control, this study synthesises findings from 17 high-quality empirical and review articles published between 2021 and 2024. Following PRISMA-ScR guidelines, the literature search included major databases such as ScienceDirect, Springer Link, and APA. The analysis categories interventions by technology type, target population, and cognitive and learning outcomes. Findings reveal a variety of digital tools employed in educational contexts, including serious games, virtual reality designs, neurofeedback, and mobile health apps, all aimed at enhancing executive function and self-regulation skills. Positive effects on motivation, attention, problem-solving, and memory are reported, especially when parental involvement and user-centered instructional design principles are integrated. However, the review highlights gaps such as limited personalisation of interventions, under-representation of diverse populations, and insufficient exploration of creativity and socio-emotional development. The study advocates for the development of adaptive, gamified digital tools leveraging emerging technologies like artificial intelligence and virtual reality, tailored to diverse cognitive profiles. Such innovations are crucial for improving educational outcomes and holistic development for children with ADHD. This synthesis not only consolidates current knowledge but also identifies critical directions for future research to address the complex needs of this population through technology-enhanced learning.

Keywords: ADHD, Digital technologies, Executive functions, Learning

Claudia Renata Pereira de Campos (Pontifícia Universidade Católica do Rio Grande do Sul - PUC/RS) and Fabiano de Vargas Scherer (Universidade Federal do Rio Grande do Sul - UFRGS).

Exploring generative artificial intelligence (GenAI) for afro-referenced co-creation.

Abstract. This article investigates how some generative artificial intelligence (GenAI) models deliver Afro-referenced co-creation from an Afrocentric perspective, breaking with the hegemonic worldview of white Western supremacy. This epistemological approach places Africans at the center, based on agency and location—that is, acting from their place. To this end, a survey of GenAI platforms was conducted (November 2024) and, through an exploratory process, the request for Afro-referenced co-creation was presented, prompted by a reference image (Orisha Ossanha) and a descriptive prompt. The goal was to understand how each platform behaved with the ethnoracial image. As a result, in addition to the initial use issues of a new technology/tool (GenAI), we observed the platforms' difficulty in incorporating elements characteristic of Black culture, specifically Afro-Brazilian culture, demonstrating the relevance of studies in this area.

Keywords: Generative artificial intelligence (GenAI), Afrocentricity, Afro-referenced co-creation



NOVEMBER **24th - 28th** 2025

November **26th**

In-person 1
Presentation in English
14:30 to 16:30

Jefferson Lewis Velasco (UFSC - Universidade Federal de Santa Catarina), Hemilyn Dal Forno Bonacorso (UFSC - Universidade Federal de Santa Catarina) and Júlio Monteiro Teixeira (UFSC - Universidade Federal de Santa Catarina).

Teaching with generative AI: evidence-based practices for genAI in university design courses.

Abstract. Generative AI (GenAI) is rapidly entering design classrooms, yet instructors lack situated guidance on how to integrate it without diluting core studio learning. This study reports an ethnographic, multi-course case involving participant observation and a reflexive diary across four university design courses (sponsored and portfolio, hybrid and remote) in 2023. We analyze classroom episodes to derive a transferable set of eight GenAI-supported practices, specify their preconditions (technological, didactic, organizational) and effective timing within the studio cycle and characterize principal risks with actionable mitigations. Findings indicate GenAI's most reliable value lies in time-boxed divergence and process transparency: live demo + guided remix and evidence log & attribution consistently redirected effort from producing more polished artifacts to generating structured alternatives and traceable decisions. Practices were effective when delivered at critical moments (e.g., early ideation) with light scaffolds (constraint lists, concise cues, rotating roles). Dominant risks, like superficial first-pass outputs and authorship opacity, were reduced by first pass with no AI critique rules and mandatory prompt/iteration logs. We supply (i) a practice set, (ii) a preconditions × timing matrix and (iii) a risk-mitigation register, plus an instructor checklist to support responsible adoption. Limitations include a single-site corpus and no causal outcome measures. Implications target course design, program assessment and future cross-site replications.

Keywords: Generative artificial intelligence, Design education, Studio pedagogy, Project-based learning, Creativity support tools

Mariya Nyzhnikova (Master Student at IADE) and Hande Ayanoglu (UNIDCOM/IADE, Unidade de Investigação em Design e Comunicação).

Anxiety and interior design: an experimental study using AI-generated supermarket imagery.

Abstract. This study investigates how variations in supermarket interior environments influence anxiety responses, using AI-generated imagery combined with emotional assessment tools. A sample of 47 participants, most of whom reported experiencing anxiety, viewed pairs of images depicting different environmental features such as crowd density, lighting, layout, and sound ambience. Participants rated anxiety levels and selected corresponding emotions using the Premo tool, which captures nuanced affective states through animated facial expressions. Results identified crowd density, lighting color, and sound ambience as the strongest anxiety triggers, with fear, shame, and dissatisfaction emerging as dominant emotional responses. The study also highlights the potential of AI-generated visuals and remote experimental protocols for exploring environmental psychology in a controlled yet accessible manner. Implications for designing public interiors that promote emotional well-being are discussed, alongside suggestions for future research using immersive technologies to enhance ecological validity.

Keywords: Mental Health, Anxiety, Artificial Intelligence, Interior Design

Laura Barela Pereira (Universidade do Estado de Santa Catarina) and Milton José Cinelli (Universidade do Estado de Santa Catarina).

Assistive technology: interfaces, autonomy for 60+.

Abstract. Technology has progressed rapidly as an active part of society and the day-to-day activities. The online interfaces for purchases are indispensable, Covid-19 increased its popularity, the platforms helped during those difficult times, the online annual retail sales growth in 2019 was 12% before the pandemic, in 2020 was 35% during the pandemic and in 2021. Online spending in Latin America increased 130% faster than in the U.S. (U.S Census Bureau). Interfaces for purchases are in the center of many daily activities, even though the public adapts to these technologies, at supermarkets, stores, restaurants, the accessibility proves to be a barrier to overcome. The era of Technology, the increased life expectancy, by 2030, 1 in 6 people in the world will be aged 60 years or over (World Health Organization), those with less familiarity with technology struggle daily to complete tasks that others already used to the interface describe as simple, it may happen because of the error rate, the unfamiliarity, the interface not being clear, and many other factors that need to be taken into consideration. The usability traces that contribute to these difficulties are discussed in this article along with connections to design concepts such as, universal design, human centred design. Considering the level of difficulty, the feedback from the interface and the support given to the user, accessibility can be improved and that is a designer's responsibility, to know the public and include interface characteristics that will not only increase the access but the return rate.

Keywords: Accessibility, Interface, Digital Design

Amanda Gomes do Nascimento (Universidade Federal de Pernambuco - UFPE)
and Alessandra Callado (CESAR).

Mapping UX design practices in AI-enabled solutions: a systematic literature review.

Abstract. This study adopts a systematic literature review (SLR) with a scoping perspective to explore how User Experience (UX) design practices are being adapted in Artificial Intelligence (AI)-enabled contexts. By analyzing 40 peer-reviewed studies published between 2020 and 2025, the review maps the breadth and depth of UX methodologies applied across AI-mediated systems. It identifies how traditional UX tools such as personas, service blueprints, and journey maps are being extended to incorporate algorithmic processes, data flows, and feedback loops. The findings reveal an evolution from human-centered toward hybrid design practices that emphasize collaboration between designers, data scientists, and intelligent systems.

Keywords: User Experience Design, Artificial Intelligence, Service Blueprinting, Human-AI Interaction, Human-AI Co-Design



NOVEMBER **24th - 28th** 2025

November 26th

In-person 2

Presentation in Portuguese

14:30 to 16:30

Bárbara Lima (Federal University of Rio Grande do Sul)
and Julio van der Linden (Federal University of Rio Grande do Sul).

Startups and artificial intelligence: problematizing the super-automation of design processes.

Abstract. The rapid incorporation of artificial intelligence into startup environments has altered how design work is organized and valued. What was once an exploratory and manual practice is increasingly mediated by automated tools that promise efficiency and speed but often narrow creative judgment. This paper examines how startups adopting generative and predictive systems face a new balance between innovation and dependence on automation. It focuses on the phenomenon of super-automation, where design activities are delegated to AI platforms with limited human oversight. The study draws on recent literature and institutional data from Brazil, a country where more than half of startups already apply AI technologies in product development and decision-making (AI Asia Pacific Institute, 2024; TI Inside Online, 2025). The discussion integrates insights from design theory and human-computer interaction to analyze how automation reshapes creative and ethical responsibilities. Authors such as Rafner et al. (2021) and Constantinides and Quercia (2025) describe how automation alters not only production processes but also how designers construct meaning and professional identity. By synthesizing these perspectives, the paper argues for models of hybrid intelligence that preserve human interpretation within algorithmic systems. The findings suggest that although AI increases productivity and lowers barriers to entry, an uncritical dependence on automated tools can weaken originality, ethical awareness, and cultural diversity. Strengthening human oversight and promoting responsible AI use are therefore essential for sustainable innovation in design-driven startups.

Keywords: Startups, Artificial Intelligence, Super-automation

Giancarlo O. S. Cassol (Federal University of Rio Grande do Sul)
and Antonio S. Takimi (Federal University of Rio Grande do Sul).

Development of an educational product for teaching materials science.

Abstract. The concepts of STEAM and Open Education have contributed to the development of countless educational products, aiming to improve the learning and understanding of scientific phenomena among students at various universities, especially those that share environments with laboratory resources, makerspaces, and fablabs. The educational products resulting from this interaction are generally used by faculty in their teaching activities, both to better explain theoretical content to students and to better connect knowledge with its assimilation. This combination of concepts converges to create these new objects, which stem from the “Do It Yourself” Culture and the Maker Movement of studying, making, and having fun while conceiving agile projects, combined with creative design techniques. In this work, the challenge for designing these educational products emerging from the fields of Design and Education aims to explore the key concepts of Crystalline Defects in Materials Science, present in Engineering and other university courses. Using the combined methodology of Munari, Löbach and Baxter, the development process for this STEAM and Open Education object proposed a solution via an educational product, as a material aid in teaching Materials Science to engineering students who have difficulty understanding phenomena in this field. This paper presents the result of this design process through the development of an educational product applying a combined methodology. Furthermore, the CAD-CAM technical files for producing this product will be made available in the future on the main open and university digital platforms, so that their users can use and improve them within their learning environments.

Keywords: Design and Education, STEAM, Open Education, Educational Product, Materials Science

The production of scientific knowledge in conjunction with ais as a form of accelerated and multi-purpose learning in undergraduate design education: advocating for enhanced human-ai interaction to optimize societal benefits.

Abstract. This article proposes a paradigm shift in undergraduate design education by advocating for the collaborative production of scientific knowledge between human learners and Artificial Intelligence (AI) systems as a means of accelerated, multi-purpose learning. Drawing on a systematic literature review of 28 peer-reviewed sources from 2000–2025, including seminal works by Ray Kurzweil on technological singularity and recent studies on AI in design pedagogy, we examine AI's evolution as human-created tools—from mechanical traps to advanced large language models (LLMs) with reasoning and agentic capabilities. These tools, while not human, extend human capacities but require ethical integration to avoid diminishing creativity. Key findings highlight pros and enablers: AI enables curriculum personalization by adapting to individual learning styles, automates routine tasks like content search and prototyping in industrial design, fosters interdisciplinary collaboration (e.g., AI-assisted UX/UI simulations), and enhances accessibility for diverse students, including those with disabilities. These facilitate accelerated knowledge production, potentially multiplying productivity by factors of 100,000 through efficient synthesis of vast data. However, cons and resistances include risks of plagiarism and creative originality loss due to over-reliance on AI-generated content, algorithmic biases perpetuating cultural inequalities in datasets, weakened manual and critical skills (e.g., deep reading for design briefs), and ethical concerns like data privacy in educational tools. The conflict between enablers and resistances results in a bifurcated outcome: diminished creativity among underprepared users but amplified capabilities for those with strong academic foundations, with emerging trends showing AI accumulating collective knowledge via user interactions, forming a “Wiki-AI” repository. We recommend a hybrid human-AI model emphasizing maximum interaction, with AI as “enabler companions” under human oversight, to optimize societal benefits like innovative design solutions. Longitudinal studies are needed to assess impacts on employability. This framework contributes to design education by promoting ethical, collaborative AI use for societal advancement.

Keywords: design education, human-AI collaboration, ethical integration, accelerated knowledge production, hybrid pedagogy

Self-directed Learning and cognitive appropriation: ‘make yourself’ through intelligent generative tools .

Abstract. This paper discusses the enhancement of self-directed learning capacity stemming from the articulation between progressive pedagogies, Maker Culture, Hacker Ethics, and the contemporary use of Large Language Models (LLMs). Beginning with a historical-critical analysis of creative appropriation and the emergence of cyberculture, the paper proposes an understanding of how learning environments can expand beyond traditional, transmission-centered methods. This expansion moves closer to models based on experimentation, sensory exploration, and learner autonomy. The article revisits the Montessori method and its contributions to perceptive development, linking it to the Maker Culture and Hacker Ethics, which emphasize learning by doing and the creative appropriation of technology. In this context, LLMs are analyzed as “cognitive crafts tools,” capable of mediating personalized learning processes, supporting investigative practices, and fostering the construction of a “responsible self” within contemporary socio-technical ecosystems. The analysis points towards pathways for an education that integrates emerging technologies in a critical, creative, and culturally situated manner.

Keywords: Self-Directed Learning, Montessori Method, Maker Culture, Hacker Ethics, Generative Artificial Intelligence

Renata Porto (IFSul Campus Pelotas), Raquel Godinho (IFSC), Maria do Carmo Curtis (Federal University of Rio Grande do Sul) and Jeferson Sigales (IFSul Campus CAVG).

The adoption of artificial intelligence in public higher education courses in Rio Grande do Sul/Brazil occurs informally through teaching practice.

Abstract. Understanding that the use of Artificial Intelligence (AI) in design teaching is a new and emerging theme, the research problem addresses a gap in the use of AI in design education. This study investigates the adoption of AI in undergraduate design education within a local and decentralised geographical scope, in RS/Brazil. The scope is guided by the teaching, project-based, and research experience of the authors. With the objective of verifying the adoption of artificial intelligence in undergraduate design, the study sought to analyse the pedagogical plans of higher education design courses in public Higher Education Institutions (HEIs) in RS, to survey the courses' faculty regarding their approach to AI in the teaching-learning process, their view on the institutional stance towards AI, and their perception of the impacts of AI adoption on the design teaching-learning process. The methodological approach of the research is qualitative and exploratory, involving a literature review, document analysis, application of an online questionnaire, and data analysis using the Fuzzy Delphi method. The results obtained highlight that the adoption of AI has been through a teaching practice approach, carried out informally. The documentary research of the Pedagogical Projects of the Design Courses in the investigated HEIs points to the absence of AI in the curriculum. However, according to the data obtained from the questionnaire with the faculty, it is observed that the use of AI occurs in many situations in design teaching in RS.

Keywords: Design, Higher Education, Faculty Perception, Design Curriculum, AI



NOVEMBER **24th - 28th** 2025

November 27th

In-person 3

Presentation in Portuguese

14:30 to 16:30

Brendon Barbosa (Universidade Federal do Rio Grande do Sul), Fabio da Silva (Universidade Federal do Rio Grande do Sul), Régio da Silva (Universidade Federal do Rio Grande do Sul) and Tânia Koltermann (Universidade Federal do Rio Grande do Sul).

3D Technologies and cultural heritage beyond replication: a systematic review on the influence of design on heritage education.

Abstract. 3D technologies have gained prominence in the technological field, with a wide range of applications in different areas of knowledge, both in research and applied practices. Recently, their adoption in the arts has stood out by contributing to the conservation, preservation, and documentation of cultural heritage pieces. This article presents a systematic literature review aiming to identify strategies to integrate these technologies into heritage education, seeking uses that go beyond mere virtual or physical replication. The analyzed studies suggest effective approaches, such as the use of augmented and virtual reality, the application of artificial intelligence to create personalized experiences, and inclusive and accessibility practices for people with disabilities. Inclusive design and the democratization of these technologies broaden public access and engagement with cultural heritage, in addition to contributing to its preservation for future generations.

Keywords: 3D Technologies, Heritage Education, Cultural Heritage, Conservation, Preservation

Designing with AI — ancestral intelligence through the learning kit for cultural resilience.

Abstract. This paper presents two Latin American experiences in which, through the design of learning kits, groups of women seek to strengthen and develop their identities around the knowledge and recovery of Ancestral Intelligence related to plants. The first case concerns the recovery and promotion of ancestral knowledge surrounding Native Non-Conventional Food Plants (PANNC), which emerged in the context of a science center. The project's outcomes derive from collaborative work with women participating in a mercado campesino (peasant market) in Colombia, resulting in the creation of a learning kit. The second case focused on designing a learning kit that embodied the activities carried out during the third exchange of experiences within an international network of Indigenous women, whose central theme was the care of the body/territory through medicinal plants. In both experiences, Artificial Intelligence was used as a supportive tool for the development of certain components of these materials. However, AI functioned merely as an auxiliary means rather than as the main actor of the process. On the contrary, the leading form of intelligence throughout these initiatives was Ancestral Intelligence, the one that has always existed within communities. Yet, because of the oral tradition through which this knowledge is transmitted, it remains at risk of being forgotten. In both cases, learning kits were designed as these didactic materials hold great potential for heritage reactivation, a process that occurs only within the context of use—when interaction with users evokes forgotten memories and stories. This, in turn, strengthens individuals' sense of belonging to their communities. Moreover, through these interactions, properties, knowledge, stories, and recipes that had “disappeared or been forgotten” are recovered and documented. Therefore, employing a learning kit potentially constitutes an open space for social reflection, for creating and transforming existing realities. Every object included in these kits represents a form of heritage and, indeed, an opportunity to reconstruct Ancestral Intelligence, that is, to make history.

Keywords: Learning kit, Ancestral Intelligence, intercultural design, community-based learning

Fernando de Almeida (Universidade Federal do Rio Grande do Sul), Gilberto Consoni (Universidade Federal do Rio Grande do Sul) and Vinicius Ribeiro (Universidade Federal do Rio Grande do Sul).

AI Slop and the digital trust crisis: the sapphos case study and critical implications for UX Design.

Abstract. The rapid growth of Generative Artificial Intelligence (GAI) has introduced the phenomenon of “AI Slop,” characterized by the proliferation of low-quality content and a lack of rigor in leveraging AI tools for code and content generation. This article examines how AI Slop manifests in software development and its catastrophic consequences for User Experience (UX), exemplified by the case of the dating application Sapphos. Sapphos, conceptualized as a “safe space” for sapphic women, was taken offline after just three days of operation due to a critical security failure that exposed users’ sensitive data. The crisis, potentially attributable to the concept of “vibe coding” (rapid, untested development, often AI-assisted), serves as a severe warning: when AI output, be it code, explanations, or content, lacks quality and transparency, the result is the erosion of trust, severe security risks, and a profound negative impact on human procedural knowledge. UX design must therefore prioritize mitigating the inherent risks of AI Slop, focusing on integrity, transparency, and the synthesis of security and aesthetic polish to restore digital trust.

Keywords: Artificial Intelligence, AI Slop, UX Design

Ana da Silva (Universidade Federal do Rio Grande do Sul), Vinicius Gadis (Universidade Federal do Rio Grande do Sul) and Fabiano V. Scherer (Universidade Federal do Rio Grande do Sul).

From the material to the experiential - the evolution of productive approaches in design and technology.

Abstract. It is knowing that the evolution of production and technological processes is a constant consequence of changing consumption patterns and the social contexts surrounding the user. In this scenario, design emerges as a way to give substance, strategy, and meaning to devices. Therefore, this study presents a bibliographic review on the evolution of technology permeated by the history of design. A chronological line is drawn from the emergence of design in the technocratic period to the arrival of the digital age, and the discussion will be conducted through the relationships between consumption, design, and technology. Furthermore, the challenges facing 21st-century professionals are also presents in the study. The article presents approaches aimed at integration the user into the formulation of technologies and approaches related to a new perspective on the production of devices and design solutions, which considered the complexity of society and the contemporary world as a creative principle for new technologies.

Keywords: Technological Evolution, History of design, Design for User Experience, Design Approache

Victoria Piffero (Federal University of Rio Grande do Sul), Fábio Teixeira (Federal University of Rio Grande do Sul) and Vinicius Ribeiro (Federal University of Rio Grande do Sul).

Design of print patterns using generative AI.

Abstract. This article examines the application of generative artificial intelligence (GAI) in surface design, with particular emphasis on its potential to support the development of textile and graphic patterns. The study presents a practical experiment that combines conversational models (ChatGPT and DeepSeek) with the image-generation platform Leonardo.ai. The research focuses primarily on the stages of problem framing and creativity within the design process, seeking to evaluate how GAI can contribute to the formulation of briefs, the expansion of visual repertoires, and the generation of innovative graphic solutions. Beyond the technical and aesthetic assessment of the generated outputs, this article also explores the theoretical and practical implications of AI-assisted design. It highlights the role of GAI not as a substitute for human creativity, but as a complementary instrument capable of catalyzing innovation, accelerating workflows, and stimulating more experimental and collaborative approaches to design practice. The findings suggest that generative AI can act as both a creative partner and a reflective mediator, supporting designers in structuring ideas and exploring alternatives. By situating GAI within the broader field of surface design, this study contributes to ongoing discussions about the integration of emerging technologies into creative industries, underscoring their potential to expand the boundaries of contemporary design practice.

Keywords: Technology, Artificial Intelligence, Generative AI, Surface Design



NOVEMBER **24th - 28th** 2025

November 27th

In-person 4
Presentation in Portuguese
14:30 to 16:30

Track: DESIGN FOR SOCIAL INNOVATION AND SUSTAINABILITY

Theo Frazão Nery (Universidade do Estado do Rio de Janeiro)
and Ricardo Artur Pereira Carvalho (Universidade do Estado do Rio de Janeiro).

From prescription to dialogue: rethinking design practices through dialogical pedagogy.

Abstract. This article offers a critical reading of design thinking in its more prescriptive form, examining it through the lens of Paulo Freire's and bell hooks' critical pedagogies. By analyzing the WeLab case—a program developed with the Heineken Group and the consultancy Maker Brands—it becomes evident that dialogical, situated practices, attentive to participants' lived experiences, were fundamental in transforming a methodologically structured project into a genuine and transformative learning experience. The aim of this work is, therefore, to contribute to the debate on the role of design in complex social contexts, advocating for the incorporation of collaborative, critical, and ethical practices into design work.

Keywords: Design thinking, Social innovation, Dialogical pedagogy, Critical design

Rafael da Silva Cezar (Universidade Federal de Santa Catarina e TXM Methods), Luiz Felipe de Azevedo Reis da Silva (TXM Methods), Hécate Torres Angenot (TXM Methods) and Luiz Salomão Ribas Gomez (Universidade Federal de Santa Catarina e TXM Methods).

Gamification, design and artificial intelligence in the empowerment of women in vulnerability: the case of the empodera program.

Abstract. This study analyzes the Empodera program, developed in Santa Catarina, Brazil, as an innovative initiative to promote inclusive female entrepreneurship in contexts of social vulnerability. By integrating inclusive design, artificial intelligence (AI), and accessible digital tools, particularly WhatsApp, the program created 14 gamified learning tracks supported by 14 eBooks and 54 short videos. These resources were strategically designed to address diverse participant profiles, ensuring clarity, practical applicability, and accessibility. More than a supportive element, AI played a central role in personalizing content and adapting learning materials to the individual realities of each entrepreneur, thereby reducing symbolic barriers and fostering meaningful inclusion. The program reached women from 47 municipalities, predominantly in mid-adulthood, demonstrating strong engagement and positive evaluations. The combination of gamification, collective mentorships, and tangible rewards increased motivation and facilitated autonomy in entrepreneurial journeys. Additionally, the collaboration with CRAS professionals and local institutions reinforced networks of support, legitimizing the program within communities. The outcomes evidenced that inclusive design and AI-driven personalization are effective strategies for democratizing entrepreneurial knowledge, overcoming geographic, cognitive, and social barriers. The program also contributed to five Sustainable Development Goals (SDGs): quality education, gender equality, decent work and income generation, reduction of inequalities, and strategic partnerships. The results indicate that this model can be scaled to other contexts, with AI's adaptive logic ensuring effectiveness across diverse realities. In sum, Empodera illustrates how technology-mediated, inclusive, and adaptive learning pathways can foster women's autonomy, strengthen entrepreneurship, and generate sustainable social impact.

Keywords: inclusive design, artificial intelligence, female entrepreneurship

Bruno Trasatti (CEDRA - EMBRAPAII Center for Embedded Devices and Research in Digital Agriculture) and Paulo Schneider (CEDRA - EMBRAPAII Center for Embedded Devices and Research in Digital Agriculture).

The integrated impact index of AI (I3A): behind the code, making visible the invisible trade-offs of artificial intelligent sustainability.

Abstract. Artificial Intelligence (AI) has become one of the most transformative yet environmentally and socially demanding technologies of our time. Despite its promise, the accelerated expansion of large language models (LLMs) has revealed a sustainability paradox: improvements in efficiency often amplify environmental burdens and deepen social inequalities. This article introduces the Integrated Impact Index of Artificial Intelligence (I3A), a novel framework designed to quantify and interpret the environmental, technical, and social trade-offs embedded in AI systems. By consolidating 24 metrics across these three dimensions, the I3A makes visible the hidden interdependencies between algorithmic optimization, carbon intensity, and social justice. Through its application to four state-of-the-art models—GPT-4o, Grok-3, Gemini 2.5 Flash, and Llama-3—the index exposes the structural tensions of what we term the sustainable AI trilemma: the impossibility of maximizing performance, efficiency, and equity simultaneously. Results reveal that Gemini leads in technical efficiency but suffers from rebound effects; Llama-3 achieves near-carbon neutrality at the cost of inclusiveness; GPT-4o balances ethical governance with moderate energy use; and Grok-3 represents multidimensional inefficiency. The I3A thus reframes AI sustainability as a systemic negotiation rather than a fixed goal, offering policymakers and researchers a transparent, data-driven instrument for steering AI toward a more balanced and accountable future.

Keywords: Artificial Intelligence Sustainability, Environmental Impact of AI, Social Implications of AI, Technology impact of AI

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Design guidelines for the revitalization of identity and tourism in the city of Garibaldi.

Abstract. This article presents design guidelines aimed at the symbolic reconstruction and revitalization of tourism in Garibaldi, a city in the Serra Gaúcha region affected by the floods that struck Rio Grande do Sul in May 2024. The research stems from the extension project Design, Identity, and Territory of Cities and adopts a qualitative approach, based on literature review, documentary research, interviews with residents, entrepreneurs, and public officials, as well as on-site observations. Grounded in design as a participatory process, the study enabled active community listening and the identification of local values, needs, and perspectives, allowing for the development of illustrative proposals focused on territorial communication, tourism mobility, cultural infrastructure, heritage enhancement, and collaborative governance. The results indicate that design can act as a strategic agent of transformation—not only in the aesthetic dimension but also as a mediator between culture, territory, and community.

Keywords: Design, Identity and Territory; Innovation; Tourism.



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