1st This IS Excellent Research Network

University of Mannheim

Schedule

15 May 2025; **Room SO 318.**

UNIVERSITY OF MANNHEIM
Business School

14.00 – 14.15 h	Welcome (Armin Heinzl, Jan Recker, Stefan Seidel, Jan Mendling)
Paper Session 1	
14.15 – 14.45 h	Dr. Deborah Mateja: Appropriation Patterns of Generative AI in Creative Tasks: A Search Perspective
14.45 – 15.15 h	Julia Campmann: Enabling Digital Innovation: The Role of Governance and Regulatory Compliance in Managing Data Commons
15.15 – 15.45 h	Kristina Sahling: Von Daten zu Entscheidungen: Wie Management-Dashboards und Recommender-Systeme die Entscheidungsfindung verändern
15.45 – 16.15 h	Coffee Break
Paper Session 2	
16.15 – 16.45 h	Tuba Khesraui: Effective Use of Process Mining Systems
16.45 – 17.15 h	Mechthild Pieper: Behavioral Patterns of Post-Adoptive IS Use: A Digital Trace Data Analysis of mHealth Use for Emotion Regulation and Mental Wellbeing
17.15 – 18.15 h	Keynote: Methodology of Algorithm Engineering (Jan Mendling)
18.15 – 18.30 h	Closing Day 1
18.30	Dinner

Schedule

16 May 2025 – Part 1; **Room O 048.**

09.00 – 09.10 h Welcome (Armin Heinzl, Jan Recker, Stefan Seidel, Jan Mendling)
Paper Session 3
09.10 – 09.40 h Dr. Stefan Rose: Mind Meets Machine: Exploring AI Cognitive Anthropomorphism and Social Presence in Human-AI Relationship Development
09.40 – 10.10 h Gangli Tan: Mapping Trends in Technology Enablers to Hardware and Software Innovation Performance
10.10 – 10.40 h Florian Rüffer: What If? Towards Aligned Multimodal Counterfactual AI Explanations
10.40 – 11.00 h Coffee Break
Roundtable Session Part 1
11.00 – 11.20 h Roundtable 1
11.20 – 11.40 h Roundtable 2
11.40 – 12.00 h Roundtable 3
12.00 – 13.00 h Lunch Break: ZEW

Schedule

16 May 2025 – Part 2; **Room O 048.**

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Paper Session 4
13.00 – 13.30 h Dr. Katharina Drechsler: Digital Innovation and Technological Convergence: A Longitudinal Analysis of Patent Data
13.30 – 14.00 h Jennifer Brettschneider: Migration Zur Post-quantum-Kryptographie Aus Betrieblicher Perspektive
14.00 – 14.30 h Stephanie Kitzler: The Dual Role of Digital Technologies in Enabling and Constraining Women's Entrepreneurship
14.30 – 15.00 h Coffee Break
Roundtable Session Part 2
15.00 – 15.30 h Paul Hillmann: Paradigms of Researching Data-Analysis Workflows
15.30 – 16.00 h Armin Heinzl: Some thoughts on research philosophy
16.00 – 16.15 h Coffee Break
Paper Session 5
16.15 – 16.45 h Florian Wagner: Digital Innovation in Gaming
16.45 – 17.15 h Dr. Lucas Göbeler: Digital Innovation and the Shifting Spatiotemporal Boundaries of Physical Activities
17.15 – 17.30 h Closing Day 2

Format: Roundtable

As this is the first *IS Excellent Research Network* meeting of this term, each Chair's three to four attendees will move as a group to meet and engage with the other three Professors.

Within each group, candidates can decide among themselves which paper will be the focal point of each roundtable discussion. This allows for a strategic alignment of research topics with the expertise of the attending Professors.

For example:

- Florian, Mechthild, and Deborah agree that Florian's paper will take center stage in the roundtable with Jan Mendling, given his expertise in technology-driven research.
- Mechthild's paper, which involves computationally intensive theory construction, will be discussed with Stefan Seidel.
- Deborah's study will be the focus of the roundtable with Jan Recker, as he previously provided valuable feedback in a friendly review round that helped advance her research.

Beyond the primary research discussion, these roundtables offer PhD students and Post-Docs a valuable opportunity to get to know the Professors, explore their research areas, and potentially identify opportunities for collaboration.

Julia Campmann

PhD Student, University of Cologne

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Enabling Digital Innovation: The Role of Governance and Regulatory Compliance in Managing Data Commons

Digital innovation increasingly relies on large data pools, making navigating governance and regulatory compliance essential. This is crucial for leveraging data commons, which are shared data environments that enable multiple entities to access, share, and utilize data collaboratively within digital ecosystems. Previous research highlights the importance of data commons in fostering digital innovation. Yet, it often overlooks the complex roles that governance practices and regulatory compliance structures play in these digital ecosystems. It frequently fails to address how regulatory compliance challenges and governance gaps can hinder the full utilization of these resources. Using a mixed-methods approach based on qualitative and quantitative data from digital ecosystems in highly regulated contexts, this study aims to identify and validate how and why key governance and regulatory compliance factors affect digital innovation outcomes in data commons. The findings are expected to provide actionable insights for organizations in highly regulated contexts looking to optimize digital innovation with shared data commons within digital ecosystems.

Tuba Khesraui

PhD Student, HU Berlin

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Effective Use of Process Mining Systems

Our paper is about process mining as a research field focused on analyzing processes based on event data. Over the years, it has grown into technology and system solutions, that extracting, visualizing, and analyzing the event data. What is missing is an explicit formulation of a theory that would explain effective use of process mining systems and enable us to conduct deductive quantitative studies in this area. We identify the Theory of Effective Use as a conceptual framework for consolidating the insights of qualitative process mining studies due to its explicit consideration of representational fidelity. Our contribution is a theoretical model that explains the antecedents and effects of effective use of process mining systems together with recommendations to further develop the general theory of effective use.

Mechthild Pieper

PhD Student, University of Mannheim

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Behavioral Patterns of Post-Adoptive IS Use: A Digital Trace Data Analysis of mHealth Use for Emotion Regulation and Mental Wellbeing

This research investigates how post-adoptive mHealth use evolves over time, focusing on the exemplary question of how mental health apps contribute to users' wellbeing through flexible Emotion Regulation (ER). Existing research lacks a behavioral perspective on how post-adoptive use develops over time and offers limited theoretical guidance on the development of ER. To address these shortcomings, we draw on a methodology of computationally intensive theory construction. Leveraging a large digital trace dataset, we apply user behavior mining to uncover patterns of post-adoptive mHealth use. Our study contributes to the understanding of how digital technology supports ER and wellbeing, offering data-driven insights into behavioral patterns of post-adoptive IS use.

Dr. Katharina Drechsler

Post-Doc, University of Hamburg

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Digital Innovation and Technological Convergence: A Longitudinal Analysis of Patent Data

As digital technologies continue to redefine business models and industries, understanding how these changes occur is crucial. Technological convergence, i.e., the amalgamation of once-separate technological domains into new combinations as a result of the inherent characteristics of digital technologies, has been recognized as a central phenomenon important to digital innovation. However, our understanding of the foundations of technological convergence in digital innovation - specifically, how it unfolds within and across the layered modular architecture - remains limited. By analyzing over 3.7 million patent families from 2000 to 2018 using natural language processing techniques, we explore the extent to which innovation within and across layers of the layered modular architecture is associated with technological convergence.

Kristina Sahling

Post-Doc, University of Hamburg

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Advancing the Theory of Effective Use in a Business Intelligence Context

Understanding how to use business intelligence (BI) systems effectively remains a critical challenge for organizations. Trieu et al. 2022 contextualized the Theory of Effective Use (TEU) in the BI context. While the TEU offers a promising lens, questions regarding the role of learning actions to improve effective use remain open. In this study, we build on Trieu et al. (2022) by adopting their survey and extending the TEU with additional constructs such as habit, finesse, trust, and a refined concept of expertise based on Sedara (2013). We report on a pretest conducted via Prolific (n = 150) with German-speaking participants with prior work experience. This pretest serves as a first step in testing the extended TEU model in realistic BI decision-making settings. The study contributes by (1) evaluating the role of additional behavioral constructs on decision-making efficiency and effectiveness, and (2) responding to prior calls for validating TEU in real-world BI contexts.

Dr. Stefan Rose

Post-Doc, University of Cologne

Mind Meets Machine: Exploring AI Cognitive Anthropomorphism and Social Presence in Human-AI Relationship Development

Rapid improvements in deep learning and natural language processing applications have led AI-based systems to increasingly display human-like social cues such as personality, autonomy, and empathy. While these characteristics enable human-human like relationships with AI-based artifacts, our understanding of how such relationships develop and their effects on users remains underexplored. Although current research has begun to apply interpersonal relationship formation theories, such as social penetration and attachment theory, findings remain inconsistent. This talk introduces a research agenda aimed at integrating human-computer interaction frameworks with psychosocial theories to better understand relationship formation between users and AI-based artifacts, as well as its potential consequences.

Florian Rüffer

PhD Student, University of Mannheim

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What If? Towards Aligned Multimodal Counterfactual AI Explanations

The rise of multimodal AI—systems integrating diverse data types such as text, images, and audio—offers new avenues regarding performance and generalizability, but also introduces greater explainability challenges due to model complexity. Counterfactual explanations are especially relevant because they align well with human reasoning compared to traditional feature-importance-based methods, altering inputs to change outcomes and resulting in intuitive "what-if" scenarios. However, conventional unimodal counterfactual generation methods often fail in multimodal contexts, creating incoherent, unrealistic examples that ignore cross-modal relationships, providing ambiguous explanations humans. This research aims to propose a new framework leveraging multimodal embeddings and cross-modal alignment techniques to identify and map correspondences between modalities. By ensuring alignment across modalities, this approach seeks to generate plausible counterfactuals that maintain semantic consistency, potentially improving human decision-making performance and trust when interacting with complex multimodal AI systems.

Stephanie Kitzler

PhD Student, University of Hamburg

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The Dual Role of Digital Technologies in Enabling and Constraining Women's Entrepreneurship

Digital technologies both enable and constrain women's venture creation. While they enable venture creation by providing access to resources, networks, and markets, gendered barriers persist in the digital world. Additionally, digital technologies may introduce new barriers for women entrepreneurs. My research explores this dual role to better understand the impact of digital technologies on women's entrepreneurship and the structural conditions that shape women's venture creation.

Gangli Tan

PhD Student, University of Hamburg

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How External Digital Technologies Enable New Digital Innovation Opportunities

As the core component of digital innovation, digital technologies enable the recombination and repurposing of existing products, processes and business models – ultimately scaling novel digital solutions. Since the advent of Industry 4.0, companies increasingly prioritise the strategic adoption and investment in digital technologies, anticipating that such measures will enhance both the volume and quality of their digital innovation outputs, thereby strengthening their overall digital innovation abilities. This study utilises Google Trends data as a proxy for digital technology trends and patent data from the United States Patent and Trademark Office as a measure of digital innovation performance. The aim is to investigate the mechanisms through which digital technologies enable digital innovation, and quantify the magnitude of their impact.

Jennifer Brettschneider

PhD Student, HU Berlin

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Migration to Post-quantum Cryptography From an Organisational Perspective

Quantum computers are one of the emerging technologies at present. This technology promises to offer many opportunities but also represents a major risk concerning currently used asymmetric cryptography like RSA. To keep cryptography safe against attacks by quantum computers, Post-Quantum Cryptography (PQC) algorithms were developed and finally standardized in August 2024. Consequently, many companies, especially those providing critical infrastructure like financial services, need to migrate to the new PQC standards. This PQC migration in a corporate context is a unique and very complex issue that many companies and information systems research are hardly aware of. We aim to answer two research questions in this regard: How do companies approach PQC migration? What factors influence their decision to adopt or delay PQC migration? Using an exploratory qualitative research design, we will conduct semi-structured interviews with companies, particularly in critical infrastructure sectors like banking, to gain insights into their PQC strategies.

Deborah Mateja

Post-Doc, University of Mannheim

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Appropriation Patterns of Generative AI in Creative Tasks: A Search Perspective

How do individuals appropriate generative artificial intelligence (AI) for creative tasks, and how does this appropriation affect the creativity of outcomes? This is the question we ask in this mixed-methods research that involves an exploratory qualitative study with an experimental task and think-aloud protocols and a confirmatory experiment based on process-based interventions that enforce the discovered AI appropriation patterns. Our results reveal three distinct patterns of generative AI appropriation: *automated AI search*, where an individual delegates the entire search to the generative AI; *AI-augmented convergent search,* where an individual uses the generative AI to search in an existing search space; and *AI-augmented generative search,* where an individual uses the generative AI to extend the boundaries of their search space. We discover that the appropriation pattern significantly influences the exploration of the search space and, consequently, the creativity of the outcome, with AI-augmented distant search yielding the highest outcome creativity.

Florian Wagner

PhD Student, University of Cologne

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Digital Innovation in Gaming

This study investigates the role of digital innovation in gaming updates and its influence on the innovation process within the gaming industry. By examining various types of digital innovation this research aims to shed light on how gaming companies update their product and shifting player expectations. This study aims to identify key patterns in how firms incorporate innovations into updates and the outcomes these innovations yield in terms of player engagement and market performance.

Dr. Lucas Göbeler

Post-Doc, University of Hamburg

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Digital Innovation and the Shifting Spatiotemporal Boundaries of Physical Activities

Digital innovation is ubiquitous and pervasive in a modern world that remains inherently physical. Widely held assumptions in digital innovation research often marginalize the relationship between the physical and the digital world to focus on novel, pure digital artifacts and their unique digital properties. However, a failure to address physicality in digital innovation may cause digital innovators to be disadvantaged or overwhelmed by unexplained and unexpected challenges of digital innovation. By conducting an artifact study in the empirical context of sports, an inherently physical context, we find that digital innovation impacts the spatiotemporal boundaries inherent to all physical environments in surprising ways. Our findings reveal four types of boundary shifts that occur as digital innovation and physical activities interact.

Paul Hillmann

PhD Student, HU Berlin

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Paradigms of Researching Data-Analysis Workflows

After a long tradition of technical contributions, recent research has established an empirical perspective on those scientists and their scientific work involving data-analysis workflows. In this paper, we revisit these recent works and reflect on them by help of two different paradigms that have been formulated in software engineering: the rational and the empirical paradigm. We then use each paradigm as a lens for sense-making of the process of developing a data-analysis workflow. Next to the well-established rational paradigm, our findings demonstrate the merits of the empirical paradigm for providing a richer understanding of the scientific process and the role of data-analysis workflows in it.