



News of the Cologne Institute for INFORMATION SYSTEMS 08|2021

Editorial



It is my pleasure to communicate with this latest newsletter a short update on yet again a very dynamic and extraordinary academic year 2020/2021. Working

from home has been and still is regarded the norm for students and staff including professors, post-docs, and doctoral students. Kudos to all students and all members of the Cologne Institute for Information Systems (CIIS) at the University of Cologne for adapting to and embracing these challenges. We are very grateful for having such an outstanding team.

In terms of research, we are excited that CIIS is a founding member of the new research initiatives "Analytics and Transformation" and "Sustainable Smart Energy & Mobility". As regards CIIS' research contributions, both initiatives aim at contributing to a better understanding of how data analytics, machine learning, and artificial intelligence are transforming organizations and society at large.

We are delighted that Friedrich Chassin as Deputy Professor for Digital Innovation and Markus Weinmann as Full

Professor for Business Analytics have joined CIIS. We wish all the best and say farewell to Jan Recker, who has left CIIS and has accepted a Full Professorship at the University of Hamburg. Furthermore, we are proud that Julian Lehmann, a former doctoral student and researcher of CIIS, has started as Assistant Professor at KIN Center for Digital Innovation of VU Amsterdam.

If you have questions or comments regarding this newsletter or if you are interested in working with us, we are more than happy to speak with you. Please feel free to contact us. Enjoy reading our newsletter and stay healthy!

Christoph Rosenkranz



This and previous newsletters can be found digitally at www.ciis.uni-koeln.de/newsletter/

There you can also register for our e-mail newsletter.

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Farewell to Jan Recker

At the beginning of this semester, Prof. Jan Recker has left the CIIS to take on a new position at the University of Hamburg. In just three years in Cologne, he made a remarkable impact: he was substantially involved in the foundation of the institute, initiated new forums for collaboration such as the CIIS doctoral consortium, and brought two

new research areas to our institute in IT entrepreneurship as well as sustainable information systems.

His team stayed at the CIIS and continues to collaborate with Jan on multiple research projects. In that regard, the last year proved to be useful for us, as we have the remote working processes already in place.

We wish Jan Recker all the best for the future and hopefully we can celebrate a successful time in Cologne soon in person!

DFG-Sponsored Research on Digital Transformation in Healthcare

One of the most notable examples of digital transformation is the field of personalized medicine. The impact of new technologies is enormous in healthcare, for example, because working with genomic data has reached clinical routine with the development of low-cost gene sequencing technologies, making personalized medicine available to everyone in principle—emphasizing the profound societal and organizational implications embedded in this transformation. However, digitization does not only lead to advantages. For example, it is also expected to change the healthcare delivery model—with far-reaching consequences for healthcare professionals' working practices and economics. Entire medical professions could become obsolete or face massive changes in their worklife. Although digital transformation is causing profound changes in healthcare, theories that describe and explain this phenomenon are lacking.

By means of an empirical study funded by the Deutsche Forschungsgemeinschaft (DFG) Prof. Rosenkranz and Prof. Sunyaev will investigate the introduction and use of a new digital IT artifact on the work processes of researchers and medical practitioners within the field of healthcare and medical work. The results will help to better understand the phenomenon of digital transformation in healthcare and medical work and will contribute to the cumulative tradition of transformation studies. This study's results will improve the understanding of the impact of IT and the influence of IT on work processes as well as the changes in the world of work.

Welcome, Friedrich Chasin!



Friedrich previously held the assistant professor position at the Chair for Information Systems and Information Management Chair at the University of Muenster. He has been a frequent guest researcher at international universities, including the University of Sydney, the Queensland University of Technology, the University of Liechtenstein, and the Pohang University of Science and Technology. His academic experience is complemented by his business expertise as the Founder and CEO of an IT developer and IT service provider EVIS GmbH.

Friedrich's main research interests lie

in the areas of digital community currencies, sharing economy, information systems & sustainability, digital transformation, and digital technology diffusion. After a few weeks in Cologne, he has already started joint research projects with his new colleagues Janek Richter, Karl Werder, Roman Zeiß, and Christian Hovestadt.

Friedrich also contributes to the teaching at our institute. This summer term, he held master seminars on the topics of sharing economy as well as digital community currencies, which were both offered for the first time as electives to our master students.

Welcome, Markus Weinmann!

Markus Weinmann is a new full professor of Business Analytics at the University of Cologne. His research concerns online behavior and analytics, in particular, using data to infer how people judge, decide, and behave on digital platforms. Areas of application include crowdfunding (e.g., Kickstarter), crowdsourcing (e.g., Transfermarkt), and online ratings (e.g., TripAdvisor).

His research has been published in leading journals (e.g., Management Science, Marketing Science, and MIS



Quarterly), won prestigious awards (e.g., European Research Paper of the Year), and has been featured by premier media outlets (e.g., The Wall Street Journal, The Guardian, Der Spiegel).

New Book: "Digital Responses to Covid-19"

During the first wave of COVID-19, Master students of the course „Selected Issues in Information Systems: Digital Innovation, Transformation, and Entrepreneurship“ at the CIIS explored how digital responses might help businesses and society to deal with problems. Their essays are now collected in a volume available via [Springer](#) and edited by Christian Hovestadt, Jan Recker, Janek Richter, and Karl Werder. The authors

explore new digital concepts for learning and teaching, provide an overview of organizational responses to the crisis through digital technologies, and examine digital solutions developed to manage the crisis.

Scientists from many disciplines work together in the fight against the virus and its numerous consequences. The book explores how information sys-

tems researchers can contribute to these global efforts and will be of interest to researchers and scholars in the field of digital business and education. We thank our students for the great collaboration: Fritz Hädrich, Lorenz Kriehn, Ivan Trilevic, Simon Friedrich Murillo, Jana Feldkamp, Zacharias Schlage, Jana Teutenberg, Shanice Casado Gracia, and Sefa Basar.

Win of Federal Government Grant: Development of an Open-Source Mobility Data Platform

The Chair for Information Systems for Sustainable Society recently received funding to commence work on the joint research project "MIAAS - Development of a European Open Source Platform for Decision-Making with Mobility Data". The joint project with a total of six partners and an endowment of EUR 1.8M is part of the mFUND research initiative of the Federal Ministry of Transport and Digital Infrastructure (BMVI). IS3 will receive EUR 228,840.

As part of MIAAS, a European open source platform for decision-making based on large-scale mobility data will be developed over a period of three years. The project acronym MIAAS stands for "Mobility Intelligence as a Service". Essential activities are the consolidation and standardization of real-time shared mobility and public transport data along with important contextual data sources, which - in combination - offer an unprecedented and comprehensive digital picture of the current state of a city's transportation system. Based on this, a mobility intelligence dashboard for different end users will be developed and tested in the cities of Cologne and Bonn. A core research focus is also on end user development for machine learning applications that aid in the planning and operations of shared mobility. The aim is to support cities in establishing shared mobility together with local public transport as a central component of the mobility strategy. MIAAS is intended to simplify the planning of shared mobility offers, improve integration with public trans-

port and facilitate the exchange with mobility providers. "In an increasingly multimodal and digitized mobility system, real-time data is available at an unprecedented scale. The main goal of MIAAS is to leverage this large-scale data in the decision-making process of municipalities, mobility providers and users. MIAAS thus creates a very important basis for the success of the sustainable mobility transition in Europe's metropolises", says Professor Ketter, who heads the project on the part of the University of Cologne.

The project consortium consists of an interdisciplinary team of practice partners and researchers. In addition to Kölner Verkehrs-Betriebe AG (KVB) and Stadtwerke Bonn Verkehrs-GmbH (SWB), the two IT startups open.INC UG and highQ Computerlösungen GmbH are also involved. On the academic side, the University of Cologne and the Bonn-Rhein-Sieg University of Applied Sciences (H-BRS) are supporting the project.

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Gefördert durch:



aufgrund eines Beschlusses
des Deutschen Bundestages



DAAD Exchange Grant with Nord University

Janek Richter and Christian Hovestadt of the CIIS secured a DAAD grant with a team from the Nord University, Norway in the Programme for Project-Related Personal Exchange (PPP). This grant scheme aims to strengthen collaboration between research groups in a mutual project.

Our project addresses the implementation of artificial intelligence (AI) applications in the service sector. AI developers claim that AI can mimic human behavior and demonstrate high level of intelligence. AI applications represent managers with a digital workforce beside the traditional human workforce. Examples include digital customer service agents. Hence, we seek to investigate how managerial practice changes while introducing workforces that are partly human and partly digital in nature.

While AI implications are heavily discussed in business and management literature, the implications and requirements for human-AI collaboration and management of AI are still at its infancy stage. Previous research focuses on technological aspects of AI, looking into its deployment, technical insights, and economic aspects, focusing on its economic effects on jobs and businesses. However, research on the organizational transformation that is shaped by human-AI collaboration has received less attention. A key question of the project is how AI can play a new role together with human functions in service organizations. The findings will offer new explanations and suggest where, how, and to what extent a change in managerial practices is needed.

Master Consortium with BCG Platinion

The CIIS and our partner BCG Platinion organized a Master Consortium in November 2020. The event took place online due to the pandemic and addressed master students in the second half of their study programme. 20 master students with a thesis starting date in 2021 participated in the event.

The one-day event strengthened the perception among master students of the many different thesis topics within the CIIS and opportunities to cooperate with our partner from practice. A central element of the program was the pitching of candidate profiles by the students and the pitching of proposed topics by the supervisors from academia and practice.

The event proved to be an excellent opportunity for master students to get in touch with academics and practitioners alike, and to identify most suitable research topics for their upcoming thesis.

Overall, the event was well-received and provided a valuable experience to students, supervisors, and our host Platinion. Due to this success, CIIS and Platinion will offer a similar event in 2021 – hopefully collocated and in-person.

Workshop on Design Thinking with Gateway & Erlkoenig

As part of a two-week preparatory course in the “Capstone Project” course, Phil Hennel and Mario Müller from the chair of Prof. Dr. Christoph Rosenkranz teamed up for the first time with Dr. Nicolas Meier from the Gateway Excellence Start-Up Center (<https://www.gateway.uni-koeln.de/>) and the design thinking experts Dominic Land and Giulia Meurer from Erlkoenig (<https://erlkoenig.io/>). Together, they designed a workshop for training participating students in agile methods and design thinking. The workshop helps students get to know each other in their respective groups and lets the students experience the entire process of agile software and new product development in five iterative phases.

For this first-hand experience, student teams were tasked with finding solutions to help students meet and exchange in times of remote learning. During the phases of design thinking, new ideas are continuously generated, visualized as prototypes, then tested, and subsequently adapted. This results in a creative alternation between observation, interpretation, hypothesis formation, and playful experimentation. The students presented a wide variety of innovative solutions to the problem domain, and the workshop built the foundation for future preparatory courses. Due to the workshop’s success, Gateway ESC, Erlkoenig, and the chair of Prof. Dr. Rosenkranz will offer additional classes in the form of Studium Integrale open for students from all faculties and majors. The class will be provided in the coming winter term 2021/2022 for the first time.

Call for Final Proposals within the Funding Program LuFo VI-2 of the Federal Ministry for Economic Affairs and Energy (BMWi)

For the sixth national aeronautical research program (LuFo VI-2) of the BMWi, the joint project draft of CIIS (Prof. Schoder) and its industrial partner, the Metrilus GmbH, was able to convince the reviewers and both partners were called to apply for funding in the second call for final proposals.

The objective of the SME-led cooperative project is the research and development of an XAI-based demonstrator for the digital and (partially) automated support of data acquisition processes and palletizing processes to solve the loading problems in the airfreight industry.

The Metrilus GmbH develops products

in the field of cargo measurement and has established itself as an innovative provider of AI-based computer vision systems in logistics. CIIS can draw on their experience from research collaborations with Lufthansa Cargo AG and Jettainer GmbH in the area of optimizing air freight palletizing and empty unit load device repositioning, with the latter winning several international awards.

The funding aims to achieve the challenging goal of a system solution that is usable for the first time in practice and is also significantly economically relevant, contributing to the increased automation of an environment that has been dominated by manual processes to date.

Call for Final Proposals within the Funding Program KI4KMU of the Federal Ministry of Education and Research (BMBF)

Within the funding program KI4KMU, CIIS (Prof. Schoder) and Stockpulse GmbH succeeded in reaching the final proposal phase. Both partners were invited by the BMBF to submit the final proposal for the planned joint research project AFFIN in the funding area “Research, Development and Utilization of Artificial Intelligence Methods in SMEs”.

The joint project pursues an innovative, holistic AI-based solution approach by developing an integrated information system to support digital forensics of publicly available information for compliance departments in the context of automated market surveillance.

Stockpulse GmbH was founded in 2011 and is specialized in the analysis of

unstructured, publicly available data with a focus on the financial market. The cooperation of the practical partner with CIIS in an interdisciplinary, complementary consortium is a highly promising approach to realize the practice-oriented and research-intensive implementation of AI-based system solutions.

The SME-led research project offers a great opportunity to play an active role in a highly relevant field of research in Germany and worldwide. The possible funding of this project creates a counterweight to solutions from, for example, the USA or China and fulfills the federal government’s funding efforts in the sense of “AI - Made in Germany”.

4th International Workshop on Software-intensive Business (IWSiB)

Dr. Karl Werder of the Cologne Institute for Information Systems was the lead chair to organize the 4th International Workshop on Software-intensive Business (IWSiB), co-organized with the XP2021 Conference, together with Prof. Dr. Sami Hyrynsalmi (LUT University, FI) and Prof. Dr. Xiaofeng Wang (Free University of Bozen-Bolzano, IT). The workshop started on 14th of June with a keynote from Prof. Dr. Guenter Ruhe

(University of Calgary, CA) on "The Return-of-Investment Perspective on Machine Learning in Software-Intensive Business". The workshop's 28 participants discussed 8 papers on topics such as software platforms, software startups, and software product management. More information about the workshop is available at <http://iwsib.org>. The IWSiB Community's next meeting will be on

the 2nd-3rd Dec. at the International Conference on Software Business at the University of South-Eastern Norway, Drammen, NO (see <https://icsob2021.org> for more information).

Connecting across Universities and Disciplines

The DFG Research Group: "How social media is changing marketing" brings together leading researchers from the University of Hamburg, the University of Münster, the University of Cologne, and the Kühne Logistics University. A number of distinguished researchers from the Columbia Business School, Penn State University, and Cornell University in the United States, the IDC Herzliya in Israel, and the London Business School also participate in the unit as international fellows. Together the group bridges the gap between marketing and information systems and pursues central questions relating to marketing in the age of digital and social media. They research the way in which businesses are able to build and shape social networks for the purposes of marketing communication, how to extract consumer needs from digital social media, how extremely negative word-of-mouth propaganda (for example, trash talk and shitstorms) impact on the value of a brand, or how to evaluate brands within social media using virtual stock exchanges and crowdfunding mechanisms.

CIIS Professor Detlef Schoder and his team focus in Needmining – a social network analysis as a tool for product development. The project investigates the time before the product launch. We answer the question how information obtained in social networks can be used even before product launch for ideation and product development. We refine and extend existing methods of text mining approaches to enable an automated Needmining, i.e. a

quantitative, objective representation of potential customer needs. For this we employ neural networks that filter out non informative content and cluster repetitive content, highly reducing the amount of manual labor necessary. Currently our research led by Prof. Schoder aims to increase the robustness of the trained neural networks, letting them be reused and reducing the amount of training data that's needs to be labeled.

This automated Needmining is based on user-generated content that with the rise of the participative web and social networks is nowadays widely available for evaluation. Through this approach a "datafication" of the ideation- and product development phase is to be established, so that quantitatively collected, qualitatively edited wishes, filtered out of the communication of the potential customers can be used as decision support instead of biased instinct and creativity.

Smart Energy and Mobility Transition: Simulating Solutions for Future Electricity Systems

The proliferation of high share of renewable energy and penetration of electric vehicles, induce new challenges to power systems and electricity markets. There is a dire need for new energy policies, market designs, and business models to adapt to rapid changes in the power systems and in particular retail electricity markets.

Power Trading Agent Competition (TAC) (<http://www.powertac.org/>) is a project managed by Professor Wolf Ketter (Chaired Professor of Information Systems at the University of Cologne and co-Director of the Institute of Energy Economics) and his colleague Professor John Collins. Power TAC models the high complexity of contemporary and future electricity markets, allowing for large scale experimentation.

The annual Power TAC tournament create a virtual energy landscape in which researchers and companies can build on scientific theories, test trading strategies and policies, and develop new business models. The 2021 Power Tac tournament happens on October 11 – 27. Interested researchers can test their designed trading agents prior to the competition by registering for the trials in September.

Power Tac is part of the BaSEF summer school 2021, which aims to bring together distinguished scholars and young researchers in the field of energy and environmental economics. Check out the website for further information and for applying at <https://basef-network.com/activities/>.

Did we spark your interest?

Please feel free to contact us if you have any questions.

Phil Hennel and Janek Richter are at your service as contact persons - whether for questions on research, cooperations, or recruiting. You can reach us by e-mail:

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