



RESEARCH CENTER
**TRUSTWORTHY DATA SCIENCE
AND SECURITY**

RC Trust Newsletter – July 2026

Dear readers,
dear colleagues,

from a new film reaching an international audience to awards, publications, research visits, and major conference contributions: the past weeks have shown how many routes lead into trustworthy data science and artificial intelligence. This issue brings together recent highlights from across RC Trust and looks ahead to new opportunities for researchers interested in joining our community.

Center Highlights



RC Trust research reaches an international audience

How can artificial intelligence, machine learning, and cybersecurity be designed in ways that deserve trust? A new film by the University Alliance Ruhr offers a look behind the scenes of RC Trust through the work of Bilal Zafar and Alexander Marx. The film has since been featured by Research in Germany as part of its international July focus on IT security and cybersecurity - bringing RC Trust's interdisciplinary approach to a wider global audience.

[Read more](#)



Jessica Szczuka joins Die Junge Akademie

Jessica Szczuka, head of the RC Trust Young Investigator Group INTITEC - Intimacy with and through Technology, has been appointed to Die Junge Akademie. During her five-year membership, she will contribute her expertise in human-computer interaction, media psychology, digital intimacy, and human-AI relationships to interdisciplinary projects at the interface of science, society, art, and policy.

[Read more](#)



Three visits, three routes into trustworthy research

Research Explorer Ruhr brought Minh Nguyen, Mohammad Nur Al Homsy, and Raju Dey to RC Trust at TU Dortmund University. During their visits, they worked with the groups of Sven Mayer, Daniel Neider, and Markus Pauly on human-AI interaction, safe reinforcement learning, formal verification, and statistical methodology. The stays created concrete starting points for future international collaboration.

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Awards, Funding & Recognition



Turning food waste into a data challenge

The European Digital Innovation Hub Dortmund received the EDIH Network Award for Excellence 2026 for “AI Instead of Waste,” a transfer project developed with Stattküche GmbH, TU Dortmund University, and the Centrum für Entrepreneurship & Transfer. Dr. Ina Dormuth carried out the central statistical work under the supervision of Markus Pauly, developing a data-based approach to support more precise meal planning and reduce food waste.

[Read more](#)



Checking the AI that checks chemical processes

The DFG Research Unit FOR 5359 on deep learning for sparse chemical process data has entered its second funding phase. Daniel Neider secured almost €500,000 with partners from Kaiserslautern for his subproject on the formal verification of anomaly detectors. The work aims to make neural networks for safety-critical chemical processes more reliable, explainable, and easier for domain experts to evaluate.

[Read more](#)

People & Team News

Chris Köcher and Paul Fink join Daniel Neider's group



Two new researchers joined the Chair of Verification and Formal Guarantees of Machine Learning on 1 July. Postdoctoral Researcher **Chris Köcher** brings expertise in automata, formal languages, and the expressivity and verification of large language models.



PhD Researcher **Paul Fink** joins the group with a background in philosophy and logic and research interests in formal methods, multi-agent systems, algorithmic game theory, and temporal logics.

Four interns join RC Trust research groups

The RC Trust Internship Program welcomes four participants this summer: Debtanu Datta joins Bilal Zafar's group, Nadya Rahmani Hanaveriesa works with Nils Köbis, Xinrui Wang joins Giulia Barbareschi's group, and Alice Qian Zhang joins Jat Singh's group. Their stays connect students with research on trustworthy AI across several disciplines.

Enes Ün joins Markus Pauly's group

Enes Ün from Sabancı University in Istanbul is completing an Erasmus traineeship at the Chair of Mathematical Statistics and Applications in Industry. As part of his traineeship in functional data analysis, the Computer Science and

Engineering student supports Marlène Baumeister's work within a DFG-funded project.

[Read more](#)

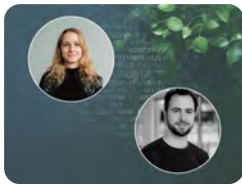


David Broczkowski tests the limits of AI models

Ruhr Fellow David Broczkowski from Lafayette College is spending a research internship in Daniel Neider's group. Together with Patrick Nossol, Simon Lutz, and other members of the team, he investigates methods for verifying transformers and Transformer Programs, with a particular focus on how efficiently different model structures can be analysed.

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Research & Publications



Green promises, grey realities

Rachel Griffin from Jat Singh's Compliant and Accountable Systems group and Barrie Sander from Leiden University examine how sustainability claims made by major technology companies may be assessed under EU consumer protection law. Their *Verfassungsblog* contribution connects the environmental costs of AI with questions of greenwashing, accountability, and public trust.

[Read more](#)



When learning data travels, trust is tested

Jakob Schwerter, Loreen Sabel, Judith Bose, Matthew L. Bernacki, Di Xu, Marko Schmellenkamp, Thomas Zeume, and Philipp Doeblner investigate whether learning-analytics models can identify students at risk across different courses and institutions. Published in *Computers & Education*, the paper emerged from an RC Trust-funded research context and highlights the importance of local validation and careful calibration.

[Read more](#)



Falling for code was not the plan

In her first scientific publication, Paula Ebner investigates romantic relationships between people and AI chatbots together with Jessica Szczuka. Published in *Technology, Mind, and Behavior*, the mixed-methods study finds that romantic fantasy - rather than loneliness alone - plays a central role in how intensely participants experience their relationships with artificial companions.

[Read more](#)



Defining “Intimacy by Design”

Jessica Szczuka, Lisa Mühl, and Tanja Schneeberger introduce the concept of “Intimacy by Design” in *AI & Society*. Their review examines how AI systems are deliberately designed to facilitate emotional, romantic, and sexual interaction and develops an interdisciplinary research agenda around attachment, privacy, commercialization, and the values embedded in technological design.

[Read more](#)

Relationships in the age of AI

Alfio Ventura, Christopher Starke, Francesca Righetti, and Nils Köbis review the opportunities and risks of synthetic relationships as a possible response to loneliness. Published in *Computers in Human Behavior Reports*, the paper argues that carefully designed AI companionship may offer support but should complement rather than replace relationships between people.

[Read more](#)

A reporting checklist for LLM research

A large international author team including Nils Köbis has introduced GUIDE-LLM, a consensus-based reporting checklist for the use of large language models in behavioural and social science. Published in *Nature Human Behaviour*, the checklist aims to strengthen transparency, reproducibility, documentation, and ethical accountability in research involving LLMs.

[Read more](#)



Only time will tell

Yulu Pi and Rosco Hunter reviewed 17 longitudinal studies on social AI companions. Their open-access article examines how researchers currently study the longer-term effects of AI companionship and identifies important gaps concerning study duration, wellbeing, dependency, privacy, and changes in users' relationships with these systems over time.

[Read more](#)

The algorithmic self-portrait

Abhisek Dash, Soumi Das, Elisabeth Kirsten, Qinyuan Wu, Sai Keerthana Karnam, Krishna P. Gummadi, Thorsten Holz, Muhammad Bilal Zafar, and Savvas Zannettou investigate how ChatGPT creates and stores memories about its users. Elisabeth Kirsten presented the paper online as part of The Web Conference 2026. The study raises questions about personal data, sensitive inferences, user agency, and control over AI-generated profiles.

👉 [Paper](#)

👉 [Conference proceedings](#)



When AI cannot explain its own steps

In an essay submitted for the KlarText Prize for Science Communication, Linara Adilova explains why strong performance alone is not enough to make deep learning trustworthy. Drawing on her doctoral research, she shows how information theory and high-dimensional geometry can help researchers understand why neural networks generalize to new data.

[Read more](#)

New study on past climate change

Maria Fernanda Sánchez Goñi, Linda Rossignol, Laurent Londeix, Thomas Extier, Nils Weitzel, and their co-authors examine land-sea temperature differences and iceberg discharges during past episodes of abrupt Atlantic circulation change. Published in *Quaternary Science Reviews*, the work may help constrain possible consequences of a future weakening of the Atlantic Meridional Overturning Circulation.

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Two new statistical publications

Paavo Sattler, Markus Pauly, and Merle Munko published “Quadratic form based multiple contrast tests for comparison of group means” in the *Journal of Statistical Planning and Inference*.

Nele Föge, Jakob Schwerter, Ketevan Gurtskaia, Markus Pauly, and Philipp Doeblner published “Adapting tree-based multiple imputation methods for multilevel data? A simulation study” in *Behavior Research Methods*.

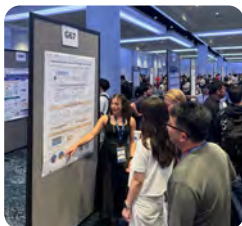
Conferences, Talks & Research Exchange



Trust met communication research

Researchers from three RC Trust groups contributed to ICA 2026 in Cape Town: Social Psychology: Media & Communication led by Nicole Krämer, Human Understanding of Algorithms and Machines led by Nils Köbis, and INTITEC led by Jessica Szczuka. Contributions involving Bianca Nowak, Nur Efsan Cetinkaya, Antonia Rosada, Fabian Albers, Paula Ebner, and other collaborators addressed AI perception, science communication, misinformation, privacy, education, and digital intimacy.

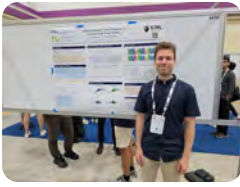
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[Read more](#)



Causal discovery under skewed noise

Daniel Klippert presented “Skewness-Robust Causal Discovery in Location-Scale Noise Models,” co-authored with Alexander Marx, at ICML 2026 in Seoul. Their method addresses a common challenge for causal discovery: real-world noise is not always symmetrically distributed, which can affect whether models identify the correct causal direction.

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Two more workshop papers at ICML 2026

Bilal Zafar’s group contributed two papers to ICML workshops in Seoul. Bruno Demattos Nogueira, Jost Große Perdekamp, Leon Swazinna, Elisabeth Kirsten, Nils Köbis, Juhi Kulshrestha, Markus Pauly, and Bilal Zafar examined political drift in language models. Elisabeth Kirsten, Nicole Krämer, and Bilal Zafar contributed a paper on epistemic diversity in LLMs.



When calibration makes uncertainty look larger

At XAI 2026, Meltem Aksoy presented “ConformaDecompose: Explaining Uncertainty via Calibration Localization.” The paper was written with Fatima Rabia Yapicioglu, Alberto Rigenti, Tuwe Löfström-Cavallin, Helena Löfström-Cavallin, Şeyda Yoncacı, and Luca Longo. The framework traces how different parts of calibration data contribute to the width of conformal prediction intervals.

[Read more](#)



When cooperation is handed to an algorithm

Inês Terrucha presented research co-authored with Nils Köbis at the International Conference on Social Dilemmas in Japan. In their preregistered experiments, participants remained in control of how AI agents acted - for example by defining rules, goals, training data, or prompts. Yet the act of delegating decisions still appeared to shift their own preferences and how they would behave when making the choices themselves.

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Corruption research meets digital responsibility

RC Trust and the University of Cologne jointly hosted the 10th Forum of the Interdisciplinary Corruption Research Network in Duisburg. The organizing team included Nils Köbis, Carolina Gerli, and Anna K. Schwickerath, with support from Bianca Nowak, Fabian Albers, Sarah Langener, and Sebastian Meinken. RC Trust researcher Oksana Huss is one of the network's founding members.

[Read more](#)



Human-centered AI starts with human minds

Nicole Krämer, Scientific Director of RC Trust, and Nikol Rummel from CAIS shaped the scientific program of the German Psychological Society conference "Designing Human-Centered AI." Held in Berlin, the event connected psychological research with political and practical perspectives on the use of AI in education, work, and healthcare.

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AI remains far from reliable use in courts

At the AI & JUSTICE conference at the High Court in Prague, Ivan Habernal presented UX4TRIAL, a collaborative project examining trustworthy legal search, interpretation, and drafting from the perspective of judges and their assistants. His contribution highlighted the urgent need for rigorous evaluation, privacy safeguards, and clear responsibility before language models can be relied upon in justice systems.

[Read more](#)



Learning from cause and consequence

PhD Researcher Gabin Agbalé from Alexander Marx's Causality group attended the Reinforcement Learning Summer School in Milan. The program allowed him to connect reinforcement learning with his work on causal representation learning, present initial results from an Interdisciplinary Working Group, and receive feedback from researchers across related fields.

[Read more](#)

Javier Aguilar at the ISBA World Meeting

Postdoctoral Researcher Javier Aguilar from Alexander Marx's Causality group will present the poster "R2 Priors for Grouped Variance Decomposition in High-Dimensional Regression" at the ISBA World Meeting in Japan.

[Read more](#)



Research exchange in Brisbane

During a short research visit to Australia, Jessica Szczuka continued her collaboration with PKelly Richards at the QUT Centre for Justice on AI-generated abuse material. She also gave an invited talk at the pre-conference of the International Society for Research on Emotion, contributing psychological perspectives to debates on justice, technology, and human vulnerability.

[Read more](#)

EU AI regulation at King's College London

Rachel Griffin taught a session on EU AI regulation at the King's College London summer school "The Political Economy of Artificial Intelligence." Lepakshi Venkatraman, a PhD Researcher in PJat Singh's Compliant and Accountable Systems group, also participated in the program as well.

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Trustworthy hardware across research and teaching

Kolja Dorschel presented work co-authored with René Walendy, Lukas Platz, Thomas Moos, Christof Paar, and Steffen Becker at the IEEE Symposium on Security and Privacy. The paper examines how standard-cell libraries may be manipulated through difficult-to-detect hardware Trojans. Zehra Karadağ and collaborators also contributed a paper to ITiCSE 2026 on lessons from eight years of teaching hardware reverse engineering.

S&P paper: <https://doi.org/10.1109/SP63933.2026.00219>

ITiCSE paper: <https://doi.org/10.48550/arXiv.2606.03697>

Conference: <https://iticse.acm.org/2026/>

Connecting with the open-source silicon community

Steffen Becker took part in FSiC 2026 to strengthen links with the open-source silicon community. Transparent and verifiable components, development tools, and supply chains are important foundations for trustworthy hardware – from individual building blocks to complete systems.

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The quiet architecture of international research

Ulrike Guba from Markus Pauly's Chair of Mathematical Statistics and Applications in Industry completed an Erasmus+ Staff Mobility stay at Leiden University. Through job shadowing, she compared administrative processes, digital systems, academic ceremonies, and the institutional structures that quietly enable international research and teaching.

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Graduate School & Academic Exchange



When science speeds up, trust must catch up

Johannes Breuer visited the RC Trust Graduate School to discuss how artificial intelligence is reshaping the production of research. His talk examined transparency, research quality, reproducibility, and the responsible use of AI throughout the scientific workflow - from literature searches and data analysis to writing, documentation, and quality control.

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Start with abilities, not assumptions

Laurianne Sitbon from Queensland University of Technology visited the RC Trust Graduate School and Giulia Barbareschi's Chair of Inclusive Technology and Collective Engagement. Her talk showed how smart technologies can be co-designed with people with intellectual disabilities by building on their abilities, forms of expression, and lived experience.

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Uncertainty is part of trustworthiness

During a guest talk at RC Trust, Julian Rodemann explored uncertainty quantification and statistical inference under feedback loops. Drawing on research in statistical learning and his previous experience as a data journalist, he discussed why trustworthy data science depends not on hiding uncertainty, but on measuring and communicating it in ways that support responsible decisions.

[Read more](#)

Calls & Opportunities

Open PhD position in Human Understanding of Algorithms and Machines

Nils Köbis's HUAM group is looking for a PhD Researcher who will develop an individual research agenda around human behaviour and artificial intelligence. Possible directions include ethical decision-making, AI-mediated communication, synthetic relationships, education, corruption, governance, and the perception of algorithms. The three-year position is expected to start on 1 December 2026. Applications close on 3 September.

[Read more](#)

Thank you for reading. We hope you enjoy exploring these highlights from RC Trust.

