

## 7th KuVS Fachgespräch on Machine Learning in Networking (MaLeNe) [Editorial]

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# 7TH KUVS FACHGESPRÄCH ON MACHINE LEARNING IN NETWORKING (MaLeNe) PROCEEDINGS

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**MARCH 19-20  
2026**



**UNIVERSITY OF AUGSBURG, AUGSBURG, GERMANY**

## 7th KuVS Fachgespräch on Machine Learning in Networking (MaLeNe)

The 7th KuVS Fachgespräch on Machine Learning in Networking (MaLeNe, <https://www.uni-augsburg.de/de/malene2026/>) was a successful event held over two half-days at the University of Augsburg on March 19 and 20, 2026. As the 7th edition of the MaLeNe workshop series, it continued the established tradition of KuVS workshops in this field. The event was organized by the workshop co-chairs Michael Seufert (University of Augsburg, Germany), Andreas Blenk (Siemens AG, Germany) and Björn Richerzhagen (Siemens AG, Germany). In total, 13 full papers were accepted.

On the first day of the workshop, the co-chairs welcomed 36 registered participants. The workshop started with an industry keynote given by Dr. Andreas Mäder (Nokia, Germany) on “AI for 6G and AI for Standards – a transformation journey”. He discussed the role of AI as a key enabler for upcoming 6G networks, particularly in the context of evolving standardization processes. Furthermore, he reflected on how development cycles in mobile communications and machine learning are converging, highlighting the need to better align innovation speed with standardization efforts.

Afterwards, the first technical session on security and intrusion detection began. Xenia Wagner (ipoque, Germany) introduced SPARTAN, a persona-driven dataset for improving IoT-based APT detection in smart homes. Marleen Sichermann (University of Wuerzburg, Germany) presented ML-based intrusion detection methods tailored for IPFIX networks. Johannes Schleicher (University of Augsburg, Germany) talked about active learning for open-set intrusion detection to identify previously unseen attacks. Hannes Schwanzer (RheinMain University of Applied Sciences, Germany) presented Bayesian packet header synthesis with expert-based authenticity evaluation.

After a coffee break, the second session started, focusing on learning-based routing and congestion control. Ahmed Nader al-Dulaimy (University of Koblenz, Germany) presented a machine learning-based approach for predicting optimal parent nodes in software-defined wireless sensor networks to improve routing efficiency. Furthermore, Musab Ahmed (Hamburg University of Technology, Germany) introduced a learning-based method for making local routing decisions in sparse aeronautical communication networks to enhance connectivity under challenging conditions. Andreas Boltres (Karlsruhe Institute of Technology, Germany) explored how neural networks can generate latent embeddings to support telemetry-aware greedy routing, enabling more informed forwarding decisions. Michael König (Karlsruhe Institute of Technology, Germany) presented a method for generalizing coordinated congestion control across multiple flows and network topologies.

The second day began with a keynote titled “Industrial AI Today. Autonomous Industry Tomorrow.” delivered by Dr. Andreas Blenk (Siemens AG, Germany). The talk highlighted current trends in industrial AI, including automation, digitalization, and future research directions toward autonomous systems.

Following this, the third technical session on AI for network management took place. Zineddine Bettouche (Deggendorf Institute of Technology, Germany) presented a spatial PDE-aware selective state-space model with nested memory for mobile traffic grid forecasting. Ibrahima Ndiaye (Otto von Guericke University Magdeburg, Germany) introduced a proactive load balancing approach for IIoT gateways using federated learning. Jonas Wessner (Ulm University, Germany) explored how large language models can be leveraged to automate network access control.

After a coffee break, the fourth session focused on systems, platforms, and digital twins. Johannes Späth (Technical University of Munich, Germany) presented a high-fidelity virtualized digital twin system designed to emulate ISP core networks with high accuracy. Sebastian Hauschild (University of Luebeck, Germany) introduced a portable IoT platform for experimental cadaverine measurements.

The workshop co-chairs concluded the day with a brief summary and expressed their gratitude to all speakers and participants for the engaging and productive discussions. As the workshop once again demonstrated its ability to foster active collaboration within the research community, a future edition is already being considered.

We also sincerely thank all authors, reviewers, attendees, and local organizers for their valuable contributions to the success of the workshop.

Michael Seufert, Andreas Blenk, Björn Richerzhagen  
MaLeNe 2026 & Workshop Co-Chairs

# Program

## Welcome and Workshop Opening

### Keynote 1

AI for 6G and AI for Standards – a transformation journey, Dr. Andreas Maeder (Nokia)

### Session 1: Security and Intrusion Detection

1. SPARTAN: A Persona-Driven Smart-Home IoT Security Dataset for APT Detection - Victor Jüttner (Leipzig University), Erik Buchmann (Leipzig University), Miguel Vargas (ipoque, a Rohde & Schwarz company), Xenia Wagner (ipoque, a Rohde & Schwarz company), Julius Jolig (ipoque, a Rohde & Schwarz company) and Christoph Jahn (ipoque, a Rohde & Schwarz company).
2. Rethinking Feature Engineering: ML-Based Network Intrusion Detection in IPFIX Networks - Marleen Sichermann (University of Wuerzburg), Katharina Dietz (University of Wuerzburg), Jochen Kögel (Isarnet Software Solutions GmbH), Rüdiger Gunreben (Isarnet Software Solutions GmbH), Stefan Geißler (University of Wuerzburg) and Tobias Hoßfeld (University of Wuerzburg).
3. Is this a New Attack? Active Learning for Zero Knowledge Open-set Network Intrusion Detection - Johannes Schleicher (University of Augsburg), Leo Stumpf (University of Augsburg), Katharina Dietz (University of Wuerzburg) and Michael Seufert (University of Augsburg).
4. An Expert Evaluation of Efficient Models for Packet Level Traffic Generation - Maurice Falk (RheinMein University of Applied Sciences), Hannes Schwanzer (RheinMein University of Applied Sciences), Adrian Ulges (RheinMein University of Applied Sciences), Martin Gergeleit (RheinMein University of Applied Sciences) and Alexander Prange (consistec GmbH).

### Session 2: Learning Based Routing and Congestion Control

5. Machine Learning-Enhanced Parent Node Prediction in Software-Defined Wireless Sensor Networks - Ahmed Nader al-Dulaimy and Prof. Dr. Hannes Frey (University of Koblenz).
6. Learning-Based Local Routing Decisions in Sparse Aeronautical Communication Networks - Musab Ahmed, Kevin Nabiev, Konrad Fuger, Koojana Kuladinithi and Andreas Timm-Giel (Hamburg University of Technology).
7. Can Neural Networks Provide Latent Embeddings for Telemetry-Aware Greedy Routing? - Andreas Boltres (Karlsruhe Institute of Technology and SAP SE), Niklas Freymuth (Karlsruhe Institute of Technology) and Gerhard Neumann (Karlsruhe Institute of Technology).
8. C3S: Towards Generalizing Coordinated Congestion Control Across Flows and Topologies - Michael König and Martina Zitterbart (Karlsruhe Institute of Technology).

### Keynote 2

Industrial AI Today. Autonomous Industry Tomorrow, Dr. Andreas Blenk (Siemens AG).

### Session 3: AI Network Management

9. Spatial PDE-aware Selective State-space with Nested Memory for Mobile Traffic Grid Forecasting - Zineddine Bettouche, Khalid Ali, Andreas Fischer and Andreas Kassler (Degendorf Institute of Technology).
10. Proactive IIoT Gateway Load Balancing via Federated Learning - Ibrahima Ndiaye and Mesut Günes (Otto-von-Guericke University Magdeburg).
11. Automated Network Access Control with LLMs - Jonas Wessner (Ulm University), Tobias Meuser (Technical University Darmstadt) and Frank Kargl (Ulm University).

#### Session 4: Systems, Platforms and Digital Twins

12. A High-Fidelity Virtualized Digital Twin System for ISP Core Networks - Johannes Späth and Georg Carle (Technical University of Munich).
13. Portable IoT Platform for Experimental Cadaverine Measurements - Sebastian Hauschild and Horst Hellbrück (Luebeck University of Applied Sciences).

#### Wrap-up and Closing Remarks