Austrian Symposium on AI, Robotics and Vision

AIRoV 2026

Leoben, April 13-15
Plenary Session I, Tuesday 9:00-12:30

asai · AGM · GMAR · Montanuniversität Leoben · vetmeduni vienna · scch software competence center hagenberg · TU WIEN · KIRAMET · MUTAVIA · AT STYRIA · iono ROBOTICS · ÖWGP · FFG · Bundesministerium Innovation, Mobilität und Infrastruktur

Zeitplan

09:00 Welcome ceremony:
09:00 2-3 min Eröffnen Elmar Rückert
09:05 10 min Rede vom Rektor/Vizerektor
09:15 3 min ASAI (Bernhard Moser)
09:18 3 min GMAR (Mathias Brandstötter)
09:21 3 min ÖAGM (Peter Roth)
09:24 3 min Präsentation Sponsoren
09:27 3 min AIROV Submission Statistics (Bernhard)
09:30 5 min CPS MUL (Elmar)
09:35 45 min Keynote Sebastian Otte (vorgestellt durch Bernhard Moser)
10:20 10 min Questions
10:30 30 min Coffee Break

11:00 35 min Workshop Spotlights I + II (Bernhard, 35:9= ca. 3min pro WS)
11:35 45 min Keynote Berk Calli (vorgestellt durch Elmar)
12:20 10 min Questions
12:30 Lunch

Welcome Ceremony Agenda

- Opening with Bernhard Nessler, Florian Kleber, Elmar Rückert
- Words of Welcome from **Univ.-Prof. Dr. Helmut Antrekowitsch,** Vizerektor für Forschung und Nachhaltigkeit
- ASAI, Bernhard Moser
- OAGM, Florian Kleber
- GMAR, Mathias Brandstötter
- Local Organization, Elmar Rückert

ASAI - Austrian Society for Artificial Intelligence

Austrian Symposium on AI, Robotics and Vision

- part of the European Association of AI
- connecting and advancing Austria's research community in AI
  - July 2026: ESSAI 2026 - Annual Summer School on AI
  - 3rd Sept. 2026: ASAI Networking Event
- special focus on promoting young talents (schools) https://bwki.asai.ac.at/
- Women in AI & ASAI: FFG project on Austrian AI ecosystem
- visit: www.asai.ac.at

asai austrian society for artificial intelligence

Women in AI AUSTRIA

OAGM - Austrian Association of Pattern Recognition

Austrian Symposium on AI, Robotics and Vision

- **45 years:** representing Pattern Recogniton / Computer Vivsion
  - Arbeitskreis Mustererkennung (OCG): 1981
  - Österreichische Arbeitsgemeinschaft für Mustererkennung: 1987
- **48 workshops**/sympossia (since 1981)
  - Also joint events: DAGM, GMAR → 3rd AIRoV in 2026
- **200 members** (official representing IAPR)

- **More information:**
  - https://aapr.at/ https://www.linkedin.com/groups/8526213/

OAGM

GMAR - Austrian Association for Measurement, Automation & Robotics

Austrian Symposium on AI, Robotics and Vision

Main Responsibilities

- **National Representation:** We act as the comprehensive representative body for companies, research institutions, educational organizations, and individual experts in measurement, automation, and robotics in Austria.
- **Networking Hub:** We connect stakeholders from science, industry, and government to foster collaboration and synergy across disciplines.
- **Technology Transfer:** We support the bridge between scientific research and industrial application to ensure local innovations reach the market.
- **Interests & Policy Advice:** We serve as a point of contact for Austrian ministries (such as the BMIMI) and funding bodies, providing expertise for innovation and technology policy.
- **Educational Support:** We promote STEM subjects and professional training to secure a future workforce for the Austrian high-tech sector.
- **Roadmap Development:** We create strategic documents, such as the national roadmaps to guide research priorities and industrial development.

Sponsors

Gold Sponsor	**KIRAMET / MUTAVIA**
Silver Sponsor	**IONO Robotics**
Silver Sponsor	**AT STYRIA**
Bronze Sponsor	**ÖWGP**

Gold Sponsor - KIRAMET / MUTAVIA

Austrian Symposium on AI, Robotics and Vision

KIRAMET

AI-based recycling of metal composite waste

is researching how to use artificial intelligence to develop efficient sensor-based metal particle sorting.

https://www.unileoben.ac.at/kiramet/projekt

BMIMI/FFG funded Austrian Flagship Project, coordinated by MUL- AVAW

MUTAVIA

Multi-modal tactile- visual robotic gripping systems for industrial applications

is developing tactile robotic ML solutions with integrated sensors exploiting functional textiles for automated sorting of waste.

https://www.unileoben.ac.at/mutavia/

BMIMI/FFG funded under Keytechnologies Call 2024 coordinated by MUL-CPS

asai AGM GMAR Montanuniversität Leoben vetmeduni vienna scch software competence center hagenberg TU WIEN KIRAMET MUTAVIA AT STYRIA iono ROBOTICS ÖWGP FFG Bundesministerium Innovation, Mobilität und Infrastruktur

Silver Sponsor - IONO Robotics

- **Industrial humanoid** robots for real-world use
- **Secure**, **sovereign** European solution
- **Simple, robust** industrial tasks
- **Fast pilot deployment** with measurable results

www.iono.tech

Silver Sponsor - AT STYRIA

- **Cross-sector**, agile **network** (business, research & education)
- Active collaboration on **joint projects**
- Efficient **operational management**
- **Exchange of knowledge** and expertise
- https://at-styria.at/

Bronze Sponsor - ÖWGP
Österreichische Wissenschaftliche Gesellschaft für Produktionstechnik

Die ÖWGP gibt Antworten auf die Fragen, welche **Produkte** in welchen künftigen **Organisationsformen** und mit welchen neuen **Produktionsverfahren** mittel- und langfristig die **Wertschöpfung** in Österreich und Europa bestimmen werden.

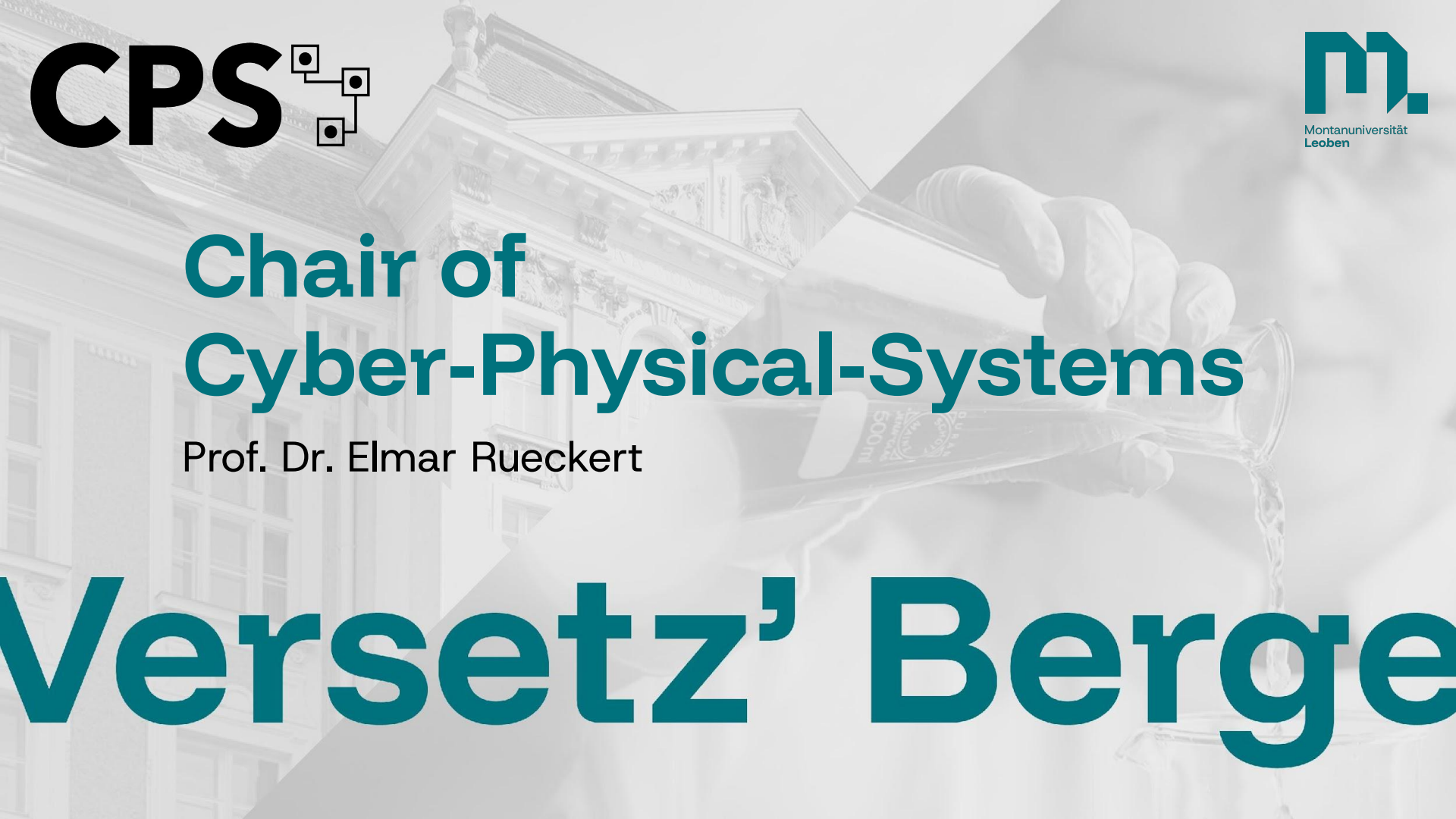
Handlungsfelder der ÖWGP:

- Universitäre Ausbildung und Entwicklung zeitgemäßer Curricula
- Erstellung einer Forschungsagenda
- Diskussion und Darstellung der Trends in der Produktionsforschung
- Technologiebewertung
- Internationaler Austausch mit themenverwandten Plattformen
- Kommunikation mit Entscheidungsträgern aus Politik und Wissenschaft

AIROV Submission statistics

Workshop Submissions	Total	Reject	Accept	Full Paper	Extended Abstract
AIM	**18**	1	**17**	0	17
AV	**21**	9	**12**	6	6
PhysicsML	**13**	4	**9**	2	7
SSR	**7**	1	**6**	1	5
ARW	**6**	0	**6**	2	4
CERTAI	**8**	3	**5**	5	0
RoboWork	**6**	1	**5**	2	3
DTA2S	**5**	0	**5**	0	5
SNNSys	**5**	0	**5**	2	3
	89	19	**70**	20	50
	100%	21%	79%		
			100%	29%	71%


Montanuniversität
Leoben
MONTANUNIVERSITÄT
Versetz' Berge

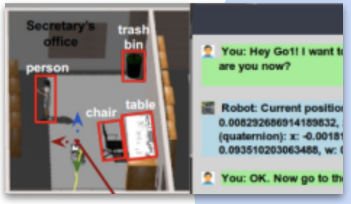

CPS
Montanuniversität
Leoben
Chair of
Cyber-Physical-Systems
Prof. Dr. Elmar Rueckert
Versetz' Berge

Cyber-Physical-Systems Kernkompetenzen

AI Machine & Deep Learning

Generative AI Systeme

- Foundation Models
- Large Language Models
- Dialog- & Interactive Systems

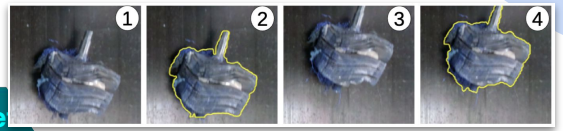


Autonomous Robotics

- Humanoid & Legged Robotics
- Mobile Robotics
- Suburban 3D Mapping and Navigation

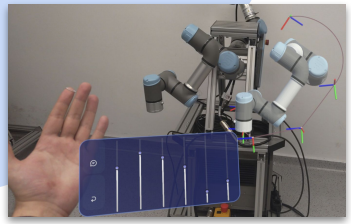
Applied Machine & Deep Learning

- AI for Recycling
- Predictive Maintenance
- Product Quality Monitoring
- Physics-Informed Models

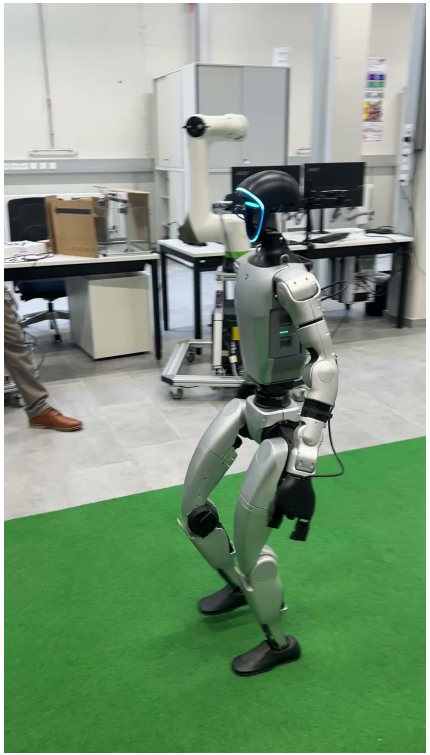
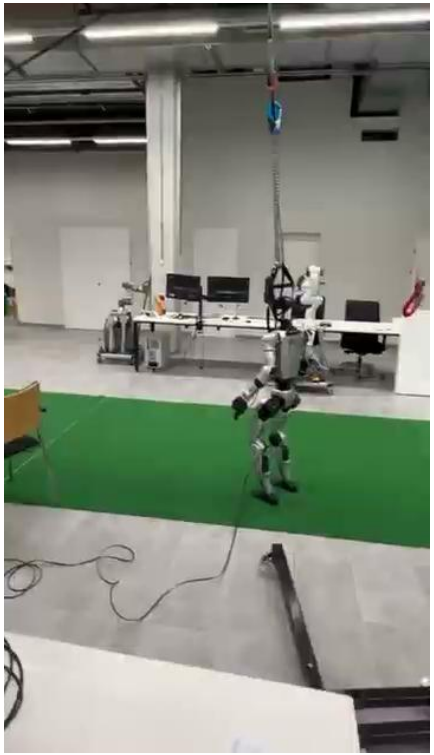
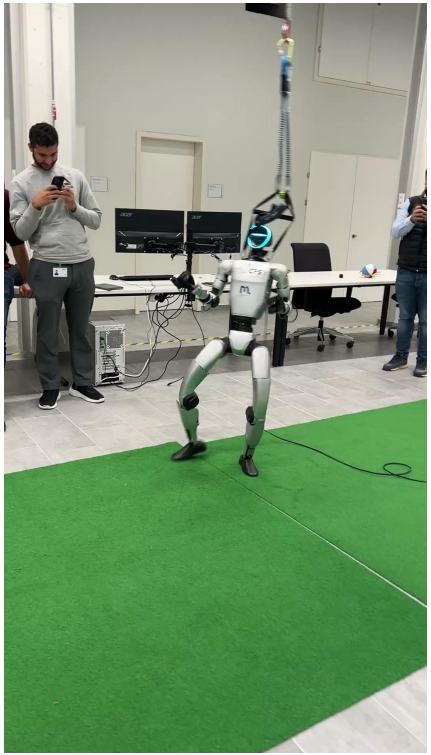
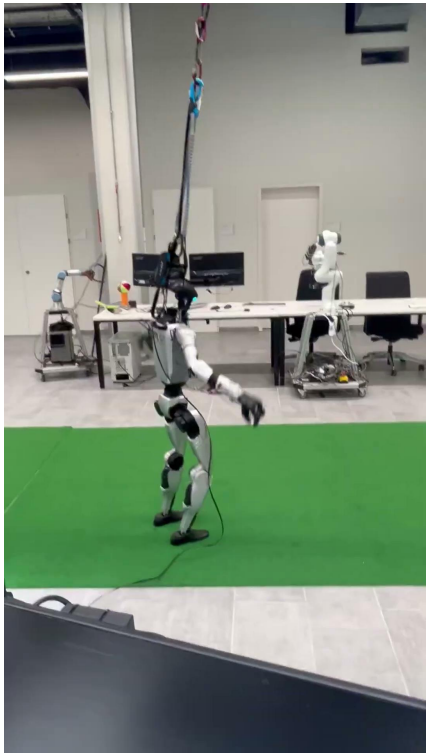


Robot Manipulation & Perception

- Tactile & Visual Deep Learning
- Human-Robot Interaction
- Interactive Reinforcement Learning
- AR/VR Systems



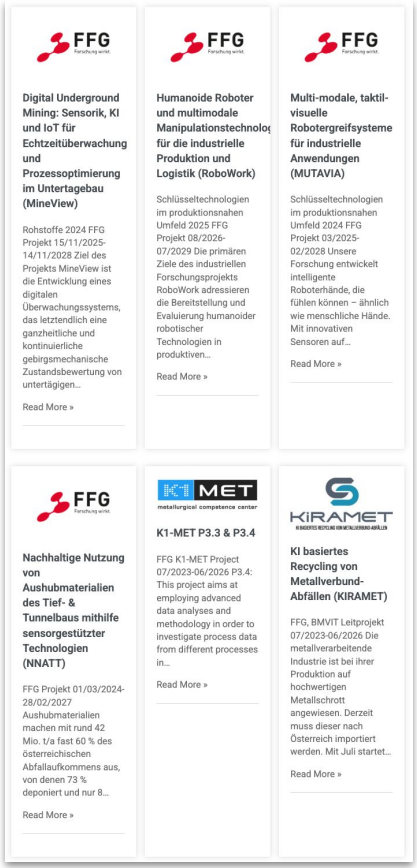
CPS - Recent Activities

CPS - 3D Tour

CPS - Facts

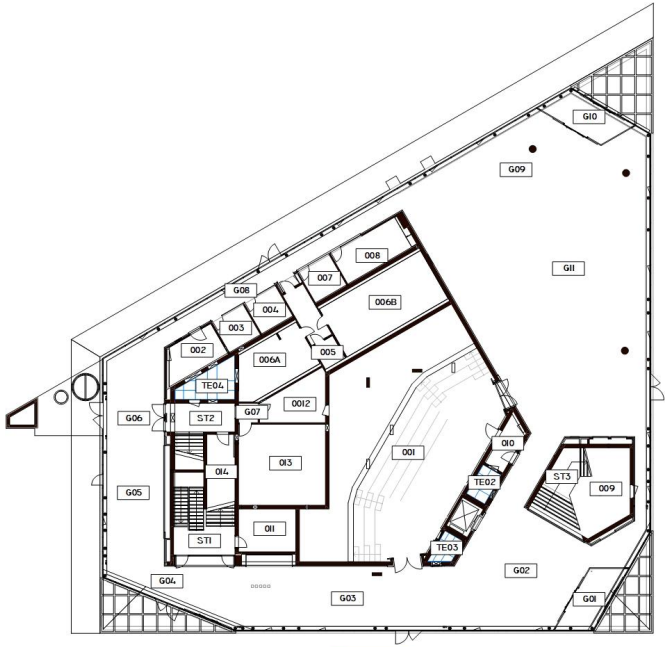
- ML / Robotics in Leoben
- Fastest growing chair at MUL
- Six FFG/SFG Projects
- 1 EU MSCA Project
- Team 16 people
- **Open Positions: +3 PhD/Postdocs**



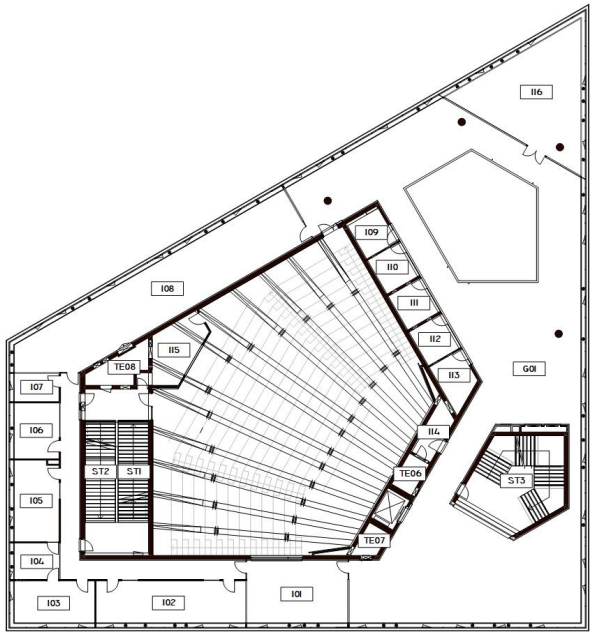
AIRoV Schedule & Rooms

Tue 14th	Wed 15th
HS3: Opening Session **Keynote I** : Sebastian Otte Workshop Spotlights (Tue)	**RoboWork (HS 2)** **AppVis (HS 3)** **SNNSys** (BR) **DTA^{2}S** (MFR)
Coffee	
HS3: **Keynote II**: Berk Calli Workshop Spotlights (Wed)	**ARW (HS 2)** **AppVis (HS 3)** **SNNSys** (BR) **DTA^{2}S** (MFR)
Lunch Buffet	
SSR (HS 1) **PhysicsML (HS 2)** **AIM (HS 3)** **CertAI** (BR)	**HS3:** **Keynote III** : Sebastian Böck **Award Ceremony**
Coffee	
SSR (HS 1) **PhysicsML (HS 2)** **AIM (HS 3)** **CertAI** (BR)	**HS3:** AIROV **Best Paper Talk** Closing Ceremony
Break	
Poster Session and served dishes	

SZ EG



SZ 1.OG



Keynote I

Tue, 14. April 2026, 9:30

Prof. Dr. rer. nat. Sebastian Otte

University of Lübeck

Towards Flexible and Efficient Learning

Coffee Break

Austrian Symposium on AI, Robotics and Vision

Workshop Spotlights I

Tue 14.04.2026

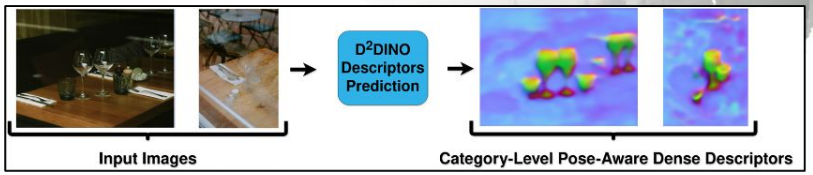
SSR	Semantic Scene Representation
Physics ML	Physics-Informed Machine Learning and Hybrid Modelling
AIM	AI in Medicine
Cert-AI	AI Certification, Fairness and Regulations

Semantic Scene Representations

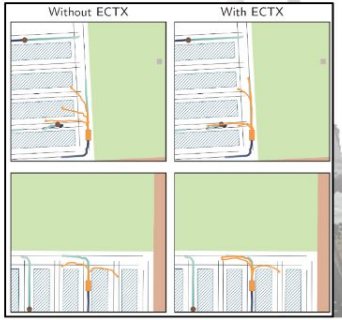
Today, 14:00, HS 1

Christian Rauch*, Linus Nwankwo*, Shail Jadav#, Jun Zhang+
* Chair of Cyber Physical Systems, TU Leoben
# Autonomous Systems Lab, TU Wien
+ Institute of Visual Computing, TU Graz

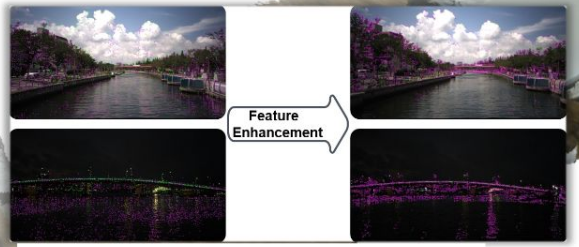
Keynotes:
Prof. Dongheui Lee:
Multimodal Scene Understanding for Human and Robot Action Monitoring
Prof. Kevin Sebastian Luck:
Exploiting Morphological Intelligence and Text-to-Network Policy Synthesis



D²DINO: Dense Descriptors from DINO for Pixel-Level Object Understanding



Enhanced Environmental Context Encoding for Accurate Trajectory Prediction in Intralogistics



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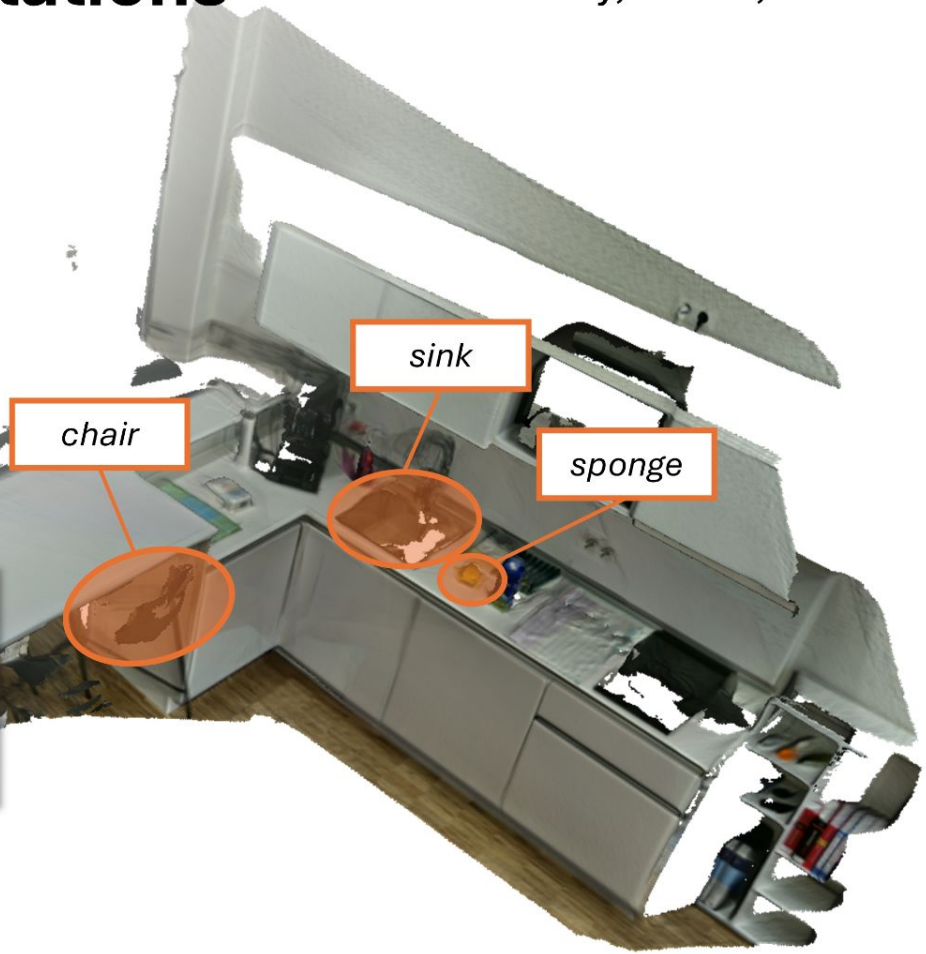


Physics ML

Bernhard Geiger[1,2], Manfred Mücke[3], Stefan Posch[4,5]

[1] SPSC, TU Graz; [2] Know Center Research GmbH; [3] Materials Center Leoben Forschung GmbH; [4] CD Lab for Physics-driven Machine Learning in Industrial Applications; [5] ITnA, TU Graz

The objective of this workshop is to **present, explore, and critically discuss recent advancements** in the rapidly evolving field of physics-based machine learning (PIML) and hybrid modeling.

Connect researchers in the field of PIML and hybrid modeling, and to thus establish a **strong community** in this field

Program on Wedesday 14:00

- **Keynote by Prof. Nils Thürey, TUM, Germany**
  "Differentiable PDE Solvers for Numerical Simulations"

10 papers accepted for oral and poster presentation

TU Graz

Christian Doppler Forschungsgesellschaft

AI in Medicine

Ahmed Alshenoudy[1], Philipp Moser[1], Patrick Rockenshaub[2], Erich Kobler[3], Hrvoje Bogunović[4]
1 Research Unit Medical Informatics, RISC Software GmbH
2 AI for clinical Decision Support in Intensive Care, MedUni Innsbruck
3 Institute of Machine learning, Johannes Kepler University Linz
4 Head of Christian Doppler Lab for Artificial Intelligence in Retina, MedUni Wien

Keynote

Spiros Denaxas | IT:U, UCL

"Using data and AI to improve human health and healthcare"

Workshop Goals

1. **Bring together interdisciplinary groups**
2. **Strengthen the local network and landscape**
3. **Create a supportive environment for students and early-career researchers**

AI Certification, Fairness and Regulations: CERT AI

Organizers
Bernhard Nessler* Michal Lewandowski* Simon Schmid*
Gregor Aichinger* Iana Kazeeva* Rania Wazir#
* Software Competence Center Hagenberg - SCCH, # leiwand.ai

Scientific research in AI Certification focuses on the **operationalisation and justification of societal trust in high-level design goals (safety, fairness, values):** translating legal and ethical requirements in measurable, testable, and statistically valid system properties across the AI system lifecycle. Ultimate question: **Alignment of AI systems**

The workshop is meant as interdisciplinary forum bridging AI technologies, legal law, standardization, and ethics.

- statistically valid testing, robustness, fairness, domain shift, benchmarks, monitoring, reproducibility, privacy preserving, transparency, explainability
- interfaces, system-2, Theory of mind, Turing Test
- risk analysis, EU AI Act, GDPR, standardization, development of new laws and regulations

Invited Talks

- *GDPR-compliant Machine Learning and the Use of Personal Data in Large Language Models* - **Gregor Aichinger**
- *The Current State of the AI Standardisation Process in CEN/CENELEC* - **Rania Wazir**

Contributions

🧠 AI Systems & Certification

- D01: *Stochastic Application Domain Definition for Functional Trustworthiness Certification of AI Systems* (Schmid et al.)
- D03: *Safety Driven Hardware and Control Architecture for Automated Surface Vessel Systems* (Hamamcıoğlu et al.)

🤖 AI Interaction & Concepts

- D02: *Conversational Agents in Multi-User Environments* (Tanriverdi et al.)
- D04: *Anthropomorphic Terminology in Artificial Intelligence* (Kazeeva et al.)

📊 Methods & Applications

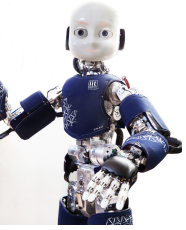
- D05: *Explainable Selection of Machine Learning Algorithms in Social Sciences* (Oreški et al.)

Austrian Symposium on AI, Robotics and Vision

Workshop Spotlights II

Wed 15.04.2026

Robowork	RoboWork Workshop
ARW	Austrian Robotics Workshop
AV	Applied Vision
SNNSys	Spiking Neural Networks
DTAAS	Digital Transformation of Agriculture & Animal Science



RoboWork

Vedant Dave[1], Elmar Rückert[1], Thomas Thurner[2], Siegfried Altmann[3], Yassine El Manyari[3]

[1] Cyber-Physical-Systems, TU Leoben; [2] Automation & Measurement, TU Leoben; [3] Rosendahl Nextrom

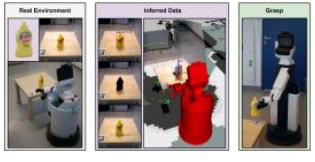
Topic: How can humanoid robots enter industrial environments and solve complex manpilation tasks utilizing diffusion model, sensor fusion, reinforcement learning and many more.

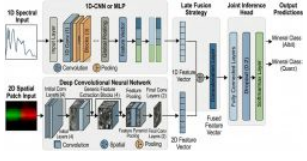
Program on Wedesday 09:30, HS2

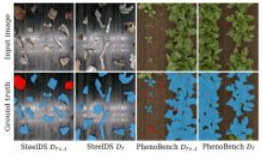
- **Keynote by Prof. Dr. Rudolf Lioutikov, KIT, Germany**

- **Univ.-Prof. Dr. Justus Piater**, **University of Innsbruck**: ‘Latest Results’
- **Ümit Bas, IONO Tech**: ‘*Generation of Humanoids from Austria’*
- **El Manyari Yassine, Rosendahl Nextrom***: ‘Limitations of humanoid robots in industrial applications’*
- **Stefan Lechner**: ‘*ZeroShop: Automated Metric Mesh Generation for Zero-Shot 6D Object Pose Estimation’*

Robotic Lab 3D





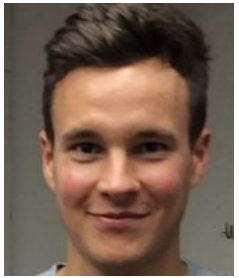


ARW: AUSTRIAN ROBOTICS WORKSHOP 2026

Thomas Thurner[1], Elmar Rückert[2], Hubert Zangl[3], Wilfried Kubinger[4], Christian Rauch[2]

[1] Automation & Measurement, TU Leoben, [2] Cyber-Physical-Systems, TU Leoben, [3] Smart System Technologies, AAU Klagenfurt, [4] Electronic Engineering & Entrepreneurship, FH Wien

Scientific Research and Industrial Applications in the field of **Tactile Robotics**.
Key scientific and technological challenges in **Tactile Sensing** and **Gripper Technologies**, Robotic Mechatronic **System Integrations**, **Grasping** and **Manipulation**



Keynote - **Dieter Büchler**, JKU Linz / UAlberta / MPI Tübingen:
„The Role of the Robotic Body in Skill Learning“
Wednesday 11:00, HS2

Presentations on Wedesday 11:30, HS2

- T. Kammerhofer: „Embedded *Haptic Control for Robotic Grasping using a Tactile Sensor System“*
- B. Rameder: „*Peak Force Evaluation for an Active Contact Flange“*
- S. Ergun: “*Multi-Modal Garment Sorting and Classification Combining Tactile and Visual Sensing”*

GMAR Technical University of Leoben UNIVERSITÄT KLAGENFURT FH University of Applied Sciences TECHNIKUM WIEN

Workshop on Applied Vision

Wednesday, 15th of April 2026, 9:00 – 12:30

Organizers

Harald Ganster, Florian Kleber, Roland Perko, Gernot Stübl, Martina Uray

OAGM (AAPR) features the Applied Vision Workshop as part of the AIRoV event

Platform for presentation and discussion of research progress as well as current projects within the OAGM community

Focus on interdisciplinary research of computer vision and pattern analysis in the **context of Applied Vision**

Invited Talk:

Thomas Riel (Fantana) - Bridging Domains: Practical Computer Vision from Defence to Space

21 submitted paper, 12 papers accepted for oral and poster presentation

FH OBERÖSTERREICH UNIVERSITY OF APPLIED SCIENCES UPPER AUSTRIA
JOANNEUM RESEARCH DIGITAL
TU WIEN

SNNSys Workshop on Spiking Neural Networks

Chairs: Bernhard A. Moser, Michael Lunglmayr , Robert Legenstein

The human brain remains the most efficient intelligent system - running on just 20 watts - thanks to its spiking signal processing.

SNNSys explores bio-inspired spiking neural networks (SNNs) and neuromorphic systems to enable physical AI, smashing today's data pipeline and energy bottlenecks.

Agenda: 5 contributions + 1h breakout session on adoption barriers

When: Wednesday, 15th of April, 9:00 - 12:30

scch { } JKU JOHANNES KEPLER UNIVERSITY LINZ ISP INSTITUTE OF SIGNAL PROCESSING TU Graz

WORKSHOP

Digital Transformation of Agriculture & Animal Science

Smart Farms | Healthy Livestock | Sustainable Future

Smart Technology

Data Driven Decisions

Better Productivity

Chairs: Sebastian Gruber, Mark A.M. Kramer, Peter Riegler-Nurscher, Peter M. Roth

Agenda: 5 contributions (+1 keynote talk)

When: Wed, April 15, 2026, 9:00 - 12:30

Webster University Vienna Private University

vetmeduni

HBLFA Francisco Josephinum Wieselburg

FACHHOCHSCHULE WIENER NEUSTADT
University of Applied Sciences - Austria

Keynote II

Tue, 14. April 2026, 11:00

Assoc. Prof. Dr. Berk Calli

Worcester Polytechnic Institute (WPI)

Leveraging Vision, Compliance, and Learning for Robust Robotic Manipulation in Unstructured Environments

AIRoV 2026 - Leoben

Key Dates and Facts by Prof. Dr. Elmar Rueckert (local chair)

Austrian Symposium on AI, Robotics and Vision

AIRoV 2026

Leoben, April 13-15

Plenary Session II, Wednesday 14:00-17:00

AIRoV 2027 - Vienna

2027-07-05 -to 2027-07-07

Conference location: WU Vienna

Local chair: WU Competence Center for Applied AI & Scientific Computing (AAISC)

Prof. Verena Dorner

Laura Waltersdorfer

WU | COMPETENCE CENTER FOR APPLIED AI AND SCIENTIFIC COMPUTING

Key Dates (preliminary)

- **July 6: Welcome**
  Evening: Conference Dinner
- **July 7: Day One:** 09:00 - open end
  Workshop Day 1 & Poster Session
- **July 8: Day Two:** 09:00 - 17:00
  Workshop Day 2 & Closing

AIRoV 2027 - Vienna

2027-07-05 to 2027-07-07

Workshop Chair: Bernhard Nessler, ASAI
Program Chair: (TBA) Peter Roth, OAGM

Organizing an AIRoV-Workshop

- Topic (your working Topic + surrounding topics)
- at least a second co-organizer from another institution
- at least one senior researcher (PostDoc)
- a number of (potential) reviewers for the topics
- Idea for an invited speaker (optional)

Motivation

experience in local environment
valuable for CV
connect with peers outside of own group

AIRoV support

local organization, poster session
online conference system, website,
proceedings, help if needed

Keynote III

Wed, 15. April 2026, 14:00

Dr. techn. Dipl. Ing. Univ. Sebastian Böck

NXAI

Beyond Transformers: Linear Scaling, In-Context Learning, and the xLSTM Paradigm

Austrian Symposium on AI, Robotics and Vision

AIRoV 2026

Leoben, April 13-15

Best Paper Award

Austrian Symposium on AI, Robotics and Vision

Best Paper/Contribution Nominees

A01 **Quantitative Assessment of Smart Intra-Row Weeders Using RGB-D Data**
Vladimir Pejakovic, Florian Kitzler, Florian Schmeisser and Alexander Bauer

B03 **Assessing the Impact of Binarization for Writer Identification in Greek Papyrus**
Dominic Akt, Marco Peer and Florian Kleber

B05 **Vision-Based Measurement of Rail Sleeper Vibrations**
Gerald Zauner

C03 **Human-Robot Interaction Through a Guided Speech Dialogue System: Leveraging Semantic Analysis with Large Language Models**
Mert Dalkilic, Werner Kurschl, Johannes Schoenboeck, Sebastian Pimminger and Gerald Zwettler

C04 **Sequential Hypothesis Testing for Model Updates**
Simon Schmid, Michal Lewandowski, Bernhard Nessler

D03 **Efficient Pose Estimation for Cows via Vision Mamba**
Salma Daadouch, Kui Zhao, Margrit Gelautz, and Peter M. Roth

E02 **On the Effectiveness of Label Smoothing in Spiking Neural Networks**
Saya Higuchi and Sebastian Otte

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Best Paper Award

Presented to

Miloš Babić (Graz University Of Technology)
Franz Rohrhofer (Know Center Research GmbH)
Bernhard Geiger (Graz University Of Technology)

In recognition of the outstanding contribution to the field through the paper entitled

“Stabilizing PINNs: A regularization scheme for PINN training to avoid unstable fixed points of dynamical systems”

Presented at **AIRoV 2026** on **April 15, 2025**

Abstract:
It was recently shown that the loss function used for training physics-informed neural networks (PINNs) exhibits local minima at solutions corresponding to fixed points of dynamical systems. In the forward setting, where the PINN is trained to solve initial value problems, these local minima can interfere with training and potentially lead to physically incorrect solutions. Building on stability theory, this paper proposes a regularization scheme that penalizes solutions corresponding to unstable fixed points. Experimental results on four dynamical systems, including the Lotka-Volterra model and the van der Pol oscillator, show that our scheme helps avoiding physically incorrect solutions and substantially improves the training success rate of PINNs.

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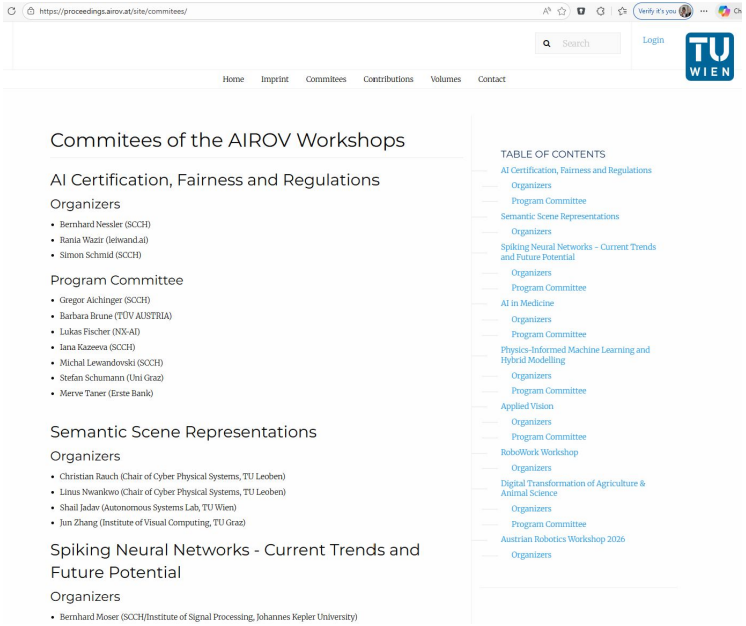

Austrian Symposium on AI, Robotics and Vision

AIRoV 2026

Leoben, April 13-15

Closing Remarks

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Thanks to: ....