Kumar Manas

Curriculum Vitae

Institute for Computer Science
Freie Universität Berlin
✉ *kumar.manas@fu-berlin.de*
 Github in *Linkedin*

Education

2022–present **PhD, Mathematics & Computer Science**, *Freie Universität Berlin*, Germany.
- ○ **Advisor:** Prof. Dr. Adrian Paschke
- ○ **Affiliation:** Professor, Institute of Computer Science, Freie Universität Berlin and Head of Data Analytics and AI, Fraunhofer FOKUS
- ○ **Research Focus:**
  - Knowledge Formalization & Representation of Traffic and Driving Rules
  - Trajectory Prediction
  - Automated Driving
  - Integration of Formalized rules as additional knowledge for driving task

2018–2021 **Master of Science, (Embedded Systems) Electrical & Computer Engineering**, *Chemnitz University of Technology*, Germany.

2010–2014 **Bachelor of Engineering, Electrical and Electronics Engineering**, *Visvesvaraya Technological University*, Karnataka, India.

Work Experience

Nov 2021–Present **Research Engineer**, *Continental AG*, Germany.
- ○ Conduct research in artificial intelligence and machine learning for automotive applications
- ○ Develop and implement innovative solutions for autonomous driving systems
- ○ Collaborate with cross-functional teams to integrate AI technologies into Continental's product portfolio

Oct 2014–Sep 2018 **Software Enginner**, *Accenture*, Bengaluru, India.
- ○ Software development for Insurance company domain

Publications

In Conference Proceedings

2024 **Kumar Manas**, Stefan Zwicklbauer, and Adrian Paschke. TR2MTL: Llm based framework for metric temporal logic formalization of traffic rules. In *2024 IEEE Intelligent Vehicles Symposium (IV)*, 2024.

2024 **Kumar Manas**, Stefan Zwicklbauer, and Adrian Paschke. CoT-TL: Low-resource temporal knowledge representation of planning instructions using chain-of-thought reasoning. In *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2024.

2023 **Kumar Manas**, Stefan Zwicklbauer, and Adrian Paschke. Legal compliance checking of autonomous driving with formalized traffic rule exceptions. In *Workshop on Logic Programming and Legal Reasoning in conjunction with 39th International Conference on Logic Programming (ICLP)*, 2023.

2023 **Kumar Manas** and Adrian Paschke. Semantic role assisted natural language rule formalization for intelligent vehicle. In Anna Fensel, Ana Ozaki, Dumitru Roman, and Ahmet Soylu, editors, *Rules and Reasoning*, pages 175–189, Cham, 2023. Springer Nature Switzerland.

Patents

Research Experience

Chemnitz University of Technology, Germany

June,2019 –
Oct 2020

Graduate Research Assistant.
3D Image Reconstruction for Computer Vision

Dataset labeling, segmentation, and pre-processing

Deep learning-based segmentation and object detection algorithm development

Depth and Tracking device plugin development

Advisor :   **Prof. Gangolf Hirtz**, *Professor, Signal processing and computer vision*, (*DST-TU Chemnitz*)

Fraunhofer Institute for Integrated Circuits IIS, Germany

Nov,2020 –
Dec,2020

Deployment of deep learning-based artificial nose sensor for smell detection on edge devices.

Time Series data, edge hardware selection, and model pruning.

elevait GmbH & Co. KG, Germany

Jan,2021 –
August 2021

CNN based Meta-Learning for noisy image classification & template matching.
Intelligent feature extraction via meta-learner and transformers for Few-shot learning

Detection and classification of both seen and unseen image classes

Developing meta-learning model for unbalanced and noisy images

Research and implement new distance function in deep metric space

Advisor :   **Prof. Gangolf Hirtz (*DST-TU Chemnitz*) & Dr. Toni Das**(*elevait GmbH & Co. KG*)

Skills

Programming
Languages

Python, PyTorch, Tensorflow, MATLAB

Web
Technologies

HTML 5, Javascript

Database   SQL, Neo4j

Referees

Prof. Adrian Paschke
Professor, Department of
Mathematics & Computer Science
Freie Universität Berlin
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Dr. Andreas Weinlich
Head of Laboratory for
Artificial Intelligence
Continental Automotive
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