Marius Memmel

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Education

Technical University of Darmstadt (TU Darmstadt) — Darmstadt, DE
Master of Science, Grade 1.1 (scale 1-6, 1 best), GPA: 3.9/4.0, in progress — *Oct. 2019 – Aug. 2022*
Major: Computer Science, *Minor*: Entrepreneurship & Innovation

Swiss Federal Institute of Technology Lausanne (EPFL) — Lausanne, CH
Exchange Program, Master Thesis, in progress — *Sept. 2021 – Present*

Appalachian State University — Boone, USA
Exchange Program, GPA: 4.0/4.0 — *Aug. 2018 – Dec. 2018*

Baden-Württemberg Cooperative State University (DHBW) — Mannheim, DE
Bachelor of Science, Final Grade 1.4 (scale 1-6, 1 best), GPA: 3.6/4.0, Rank 1 — *Aug. 2016 – Sept. 2019*
Major: Business Information Systems, *Concentration:* Software Engineering

Work & research Experience

Student Research Assistant — Darmstadt, DE
Artificial Intelligence and Machine Learning Lab, TU Darmstadt — *Nov. 2020 – Aug. 2021*

- Research on interactive concept learning and disentanglement
- Weakly-supervised concept learning via a novel concept swapping algorithm and user interaction
- Supervised by Prof. Kristian Kersting and Wolfgang Stammer, publication [1]

Student Research Assistant — Darmstadt, DE
Medical & Environmental Computing Lab, TU Darmstadt — *Oct. 2020 – March 2021*

- Developing an adversarial method for multi-domain hippocampal segmentation
- Extension of the domain-invariant segmentation network to a continual learning problem
- Supervised by Anirban Mukhopadhyay and Camila Gonzalez, publication [3]

Machine Learning Engineer (part-time) — Frankfurt, Germany
Sopra Steria Group SA — *Jan. 2020 – Dec. 2020*

- Improving liquidity forecast solutions with LSTMs
- Development and deployment of machine learning pipelines with Kubeflow

Software Engineer (part-time) — Würzburg, Germany
Knauf IT — *Aug. 2016 – Sept. 2019*

- Full stack development with jQuery, Bootstrap, NodeJS, and MongoDB
- Deployment of a website-testing solution to reduce the testing effort for developers
- Website configuration via CMS to improve user experience

Publications

[1] Stammer W., **Memmel M.**, Schramowski P., and Kersting K., "Interactive Disentanglement: Learning Concepts by Interacting with their Prototype Representations", **Under review at**, *Conference on Computer Vision and Pattern Recognition* (CVPR), 2022 [preprint]

[2] **Memmel M.**, Liu P., Tateo D., and Peters J., "Dimensionality Reduction and Prioritized Exploration for Policy Search", **Under review at** *Artificial Intelligence and Statistics* (AISTATS), 2022 [preprint]

[3] **Memmel M.**, Gonzalez C., and Mukhopadhyay A., "Adversarial Continual Learning for Multi-Domain Hippocampal Segmentation", in *Domain Adaptation and Representation Transfer* (DART) Workshop at *Medical Image Computing and Computer Assisted Intervention* (MICCAI), 2021 [paper] [arXiv] [code]

Research Projects & Theses

Mid-Level Visual Priors for Vision-based SLAM
Master Thesis, in progress, Visual Intelligence and Learning Lab, EPFL

- Evaluating mid-level visual priors for neural SLAM
- Replacing depth sensors and odometry with fully visual components
- Supervised by Prof. Amir Zamir

Dimensionality Reduction and Prioritized Exploration for Policy Search [2]
Intelligent Autonomous Systems Lab, TU Darmstadt

- Introduced prioritized exploration and guided dimensionality reduction for policy search algorithms in a black-box optimization scenario
- Supervised by Prof. Jan Peters, Puze Liu, and Davide Tateo

MushroomRL Implementation of CREPS and MORE [code]
Open Source Contribution, Intelligent Autonomous Systems Lab, TU Darmstadt

- Contribution of highly efficient implementations of the Constrained Weighted Maximum Likelihood Estimate for Relative Entropy Policy Search (CREPS) and Model-Based Relative Entropy Stochastic Search (MORE) to the Python Reinforcement Learning Library MushroomRL

Scalable 3D Semantic Segmentation for Gun Detection in CT Scans [code] [paper]
Visual Inference Lab, TU Darmstadt

- Utilizing U-Net and Occupancy Network architectures to propose a novel 3D semantic segmentation method for gun detection in baggage CT scans that reduces video memory consumption for high-resolution voxelized volumes
- Dataset provided by a company for screening and detection technology
- Supervised by Prof. Stefan Roth and Faraz Saeedan

Conception and Development of a Machine Learning Model for the Analysis of the Energy Consumption of a Plasterboard Dryer [thesis]
Bachelor Thesis, DHBW

- Providing business with valuable insights that lead to the identification of incorrect operation
- Evaluation of machine learning models and deep neural networks
- Supervised by Prof. Julian Reichwald and Halgurt Bapierre

Awards & Scholarships

Deutschlandstipendium
Merit-based scholarship given to less than 1% of all students in Germany — *2019 – 2020*

Best Graduate
Award for the best graduate of Business Information Systems (Software Engineering) at DHBW — *2019*

Baden-Württemberg-Stipendium
Scholarship given to 1500 high-achieving students/year to promote exchange — *2018*

Skills

Languages: (native) German; (fluent) English; (basics) Chinese
Programming Languages: (proficient) Python; (familiar) Java, LaTeX, JavaScript
Libraries: (proficient) PyTorch, Scikit-Learn
Operating Systems: (proficient) Windows, Linux

Volunteering

Volunteer Firefighter — Schweinfurt, DE
Freiwillige Feuerwehr Ettleben e.V. — *June 2010 – Present*

Team Confidant — Darmstadt, DE
Darmstadt Athenas e.V. — *May 2021 – Oct. 2021*

Social Welfare Officer — Darmstadt, DE
Darmstadt Athenas e.V. — *Apr. 2020 – May 2021*

Head Organizer Campfire Cup — Würzburg, DE
Broombreakers Quidditch Club — *June 2018 – June 2020*

Au Pair — Beijing, CN
LoPair Education — *Nov. 2015 – May 2016*