

# Marius Memmel

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🐱 memmelma | in Marius Memmel | 🐦 @mammelma

## EDUCATION

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<b>Technical University of Darmstadt (TU Darmstadt)</b> <i>Master of Science, Grade 1.1 (scale 1-6, 1 best), GPA: 3.93/4.00, in progress</i> <b>Major:</b> Computer Science, <i>Minor:</i> Entrepreneurship & Innovation	Darmstadt, DE Oct. 2019 – July 2022
<b>Swiss Federal Institute of Technology Lausanne (EPFL)</b> <i>Exchange Program, Master Thesis, in progress</i>	Lausanne, CH Sept. 2021 – Present
<b>Appalachian State University</b> <i>Exchange Program, GPA: 4.0/4.0</i>	Boone, USA Aug. 2018 – Dec. 2018
<b>Baden-Württemberg Cooperative State University (DHBW)</b> <i>Bachelor of Science, Final Grade 1.4 (scale 1-6, 1 best), GPA: 3.97/4.00, Rank 1</i> <b>Major:</b> Business Information Systems, <i>Concentration:</i> Software Engineering	Mannheim, DE Aug. 2016 – Sept. 2019

## WORK & RESEARCH EXPERIENCE

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<b>Student Research Assistant</b> <i>Artificial Intelligence and Machine Learning Lab, TU Darmstadt</i> <ul style="list-style-type: none"><li>• Research on interactive concept learning and disentanglement</li><li>• Weakly-supervised concept learning via a novel concept swapping algorithm and user interaction</li><li>• Supervised by Prof. Kristian Kersting and Wolfgang Stammer, publication [1]</li></ul>	Darmstadt, DE Nov. 2020 – Aug. 2021
<b>Student Research Assistant</b> <i>Medical &amp; Environmental Computing Lab, TU Darmstadt</i> <ul style="list-style-type: none"><li>• Developing an adversarial method for multi-domain hippocampal segmentation</li><li>• Extension of the domain-invariant segmentation network to a continual learning problem</li><li>• Supervised by Anirban Mukhopadhyay and Camila Gonzalez, publication [3]</li></ul>	Darmstadt, DE Oct. 2020 – March 2021
<b>Machine Learning Engineer (part-time)</b> <i>Sopra Steria Group SA</i> <ul style="list-style-type: none"><li>• Improving liquidity forecast solutions with LSTMs</li><li>• Development and deployment of machine learning pipelines with Kubeflow</li></ul>	Frankfurt, Germany Jan. 2020 – Dec. 2020
<b>Software Engineer (part-time)</b> <i>Knauf IT</i> <ul style="list-style-type: none"><li>• Full stack development with jQuery, Bootstrap, NodeJS, and MongoDB</li><li>• Deployment of a website-testing solution to reduce the testing effort for developers</li><li>• Website configuration via CMS to improve user experience</li></ul>	Würzburg, Germany Aug. 2016 – Sept. 2019

## PUBLICATIONS

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- [1] Stammer W., **Mammel 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 [arxiv]
- [2] **Mammel 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] **Mammel 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]
- [4] **Mammel M.\***, Reich C.\*, Wagner N.\*, and Saeedan F., "Scalable 3D Semantic Segmentation for Gun Detection in CT Scans" (\*equal contribution), *arXiv preprint 2020* [arxiv] [code]

## RESEARCH PROJECTS & THESES

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### 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] [4]

*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

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### 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

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**Languages:** (native) German; (fluent) English; (basics) Chinese

**Programming Languages:** (proficient) Python; (familiar) Java, L<sup>A</sup>T<sub>E</sub>X, JavaScript

**Libraries:** (proficient) PyTorch, Scikit-Learn

**Operating Systems:** (proficient) Windows, Linux

## VOLUNTEERING

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### Volunteer Firefighter

*Freiwillige Feuerwehr Ettleben e.V.*

*Schweinfurt, DE*

*June 2010 – Present*

### Team Confidant

*Darmstadt Athenas e.V.*

*Darmstadt, DE*

*May 2021 – Oct. 2021*

### Social Welfare Officer

*Darmstadt Athenas e.V.*

*Darmstadt, DE*

*Apr. 2020 – May 2021*

### Head Organizer Campfire Cup

*Broombreakers Quidditch Club*

*Würzburg, DE*

*June 2018 – June 2020*

### Au Pair

*LoPair Education*

*Beijing, CN*

*Nov. 2015 – May 2016*