Lukas Schäfer

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EDUCATION

UNIVERSITY OF EDINBURGH
MSc Informatics
Aug 2019 | Edinburgh, UK
Distinction (77.28%)
Dissertation: Curiosity in Multi-Agent Reinforcement Learning (74%)
DAAD graduate scholarship

SAARLAND UNIVERSITY
BSc Computer Science
Sep 2018 | Saarbrücken, Germany
Grade 1.2 (German scale) - UK 1st
Dissertation: Domain-Dependent Policy Learning using Neural Networks in Classical Planning (1.0)

WARNDTGYMNASIUM
Abitur | 1.0
Jun 2015 | Geislautern, Germany

Coursework

GRADUATE
Reinforcement Learning
Algorithmic Game Theory and its Applications
Machine Learning and Pattern Recognition
Probabilistic Modelling and Reasoning
Robotics: Science and Systems
Decision Making in Robots and Autonomous Agents

UNDERGRADUATE
Automated Planning
Admissible Search Enhancements
Neural Networks: Implementation and Application
Information Retrieval and Data Mining
Software Engineering

SKILLS

PROGRAMMING
Competent
Python • C++ • C • Java • SML
Familiar
Rust • HTML • CSS • Matlab • Bash

TECHNOLOGIES AND TOOLS
PyTorch • TensorFlow • Keras • NumPy • UNIX • Git • Vim • LaTeX

[References available on request]

RESEARCH EXPERIENCE

MSC DISSERTATION | Autonomous Agents Research Group
May – Aug 2019 | University of Edinburgh
- Applied curiosity as intrinsically computed exploration bonuses for multi-agent reinforcement learning (MARL)
- Implemented count- and prediction-based curiosities to evaluate for value-based and policy-gradient MARL methods using PyTorch
- Evaluated and analysed the influence of curiosity on cooperative and competitive MARL involving partial observability and sparse rewards
- Applied curiosity led to considerably improved stability and convergence applied to policy-gradient MARL trained with sparse reward signals

WORK EXPERIENCE

NAVIGATION TEAM MEMBER | University of Edinburgh Hyperloop Team
Sep 2018 – Aug 2019 | Edinburgh, UK
- Developing navigation system of "The Flying Podsman" Hyperloop prototype using sensor filtering, processing and control techniques to estimate location, orientation and speed of the pod
- Finalist for the SpaceX 2019 Hyperloop competition in California

TEACHING EXPERIENCE

LECTURER AND COACH | Mathematics Preparation Course
Sep – Oct 2017 | Saarland University
- Assisted organisation of preparation course introducing upcoming computer science students to student life and mathematical concepts
- Explained importance of mathematics for CS, formal languages and predicate logic to $\sim$ 250 participants in daily lectures of the first week
- Supervised two groups to provide feedback in daily coaching-sessions
- The course received BESTE-award for special student commitment 2017 of Saarland University

PROGRAMMING 1 TEACHING ASSISTANT | Dependable Systems and Software Group
Oct 2016 - Mar 2017 | Saarland University
- Held weekly tutorials and office hours teaching fundamental concepts of functional programming, complexity theory and correctness proofs
- Marked weekly tests as well as mid- and endterm exams
- Created learning materials and discussed student progress

PROJECT EXPERIENCE

PLAGIARISM DETECTION TOOL | Software Engineering Project
Apr - Jul 2017 | Saarland University
- Researched, planned and built a reliable similarity detection for text & code with language-specific analysis for Python and C
- Designed and implemented a web-based output creation, highlighting similar submissions and plagiarism cases
- Our software is now successfully used in our customer's lectures to detect plagiarism cases on Python code