MARCEL HUSSING

Researcher in (Deep) Reinforcement Learning

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ABOUT ME

Building stable and reliable deep reinforcement learning algorithms. Excited about unraveling nature's mysteries through science. Strong communicator who thrives in great teams. — Let's be catalysts of positive change!

EDUCATION

Ph.D. Computer & Information Science
— University of Pennsylvania

📅 01 2021 – .. ...   📍 Philadelphia, US

Part of GRASP lab, specifically the Lifelong Learning lab of Prof. Eric Eaton
- Initiated the formal study of **replicable reinforcement learning**
- Developed an open-source **robotic manipulation benchmark** and **four offline datasets** for compositional deep reinforcement learning
- Improved the stability & performance of a **few-shot transfer learning method**

M.Sc. Computer Science
— Technical University of Darmstadt

📅 10 2016 – 03 2020   📍 Darmstadt, DE

Focused studies on machine-, deep- and reinforcement learning
- Developed an **open-source implementation for deep RL** to play StarCraft II
- Developed an algorithm for explicitly forgetting knowledge in **biologically inspired spiking neural networks** to enable continual learning in robots that degrade
- Master's Thesis: **Object-Aware State Representation Learning** — Used dynamical systems information of objects to speed up deep reinforcement learning training

B.Sc. International Business Administration & Information Technology
— University of Applied Sciences Ludwigshafen

📅 08 2013 – 07 2016   📍 Ludwigshafen, DE

Mixture of studies on business administration, economics and computer science

SELECTED PUBLICATIONS

*The * symbol indicates corresponding authors.*

Conference Proceedings

1 Eric Eaton, Marcel Hussing*, Michael Kearns, and Jessica Sorrell*. "Replicable Reinforcement Learning". In: *37th Conference on Neural Information Processing Systems*. 2023. eprint: 2305.15284.

2 Jorge A.* Mendez, Marcel* Hussing, Meghna Gummadi, and Eric Eaton. "CompoSuite: A Compositional Reinforcement Learning Benchmark". In: *1st Conference on Lifelong Learning Agents*. 2022. eprint: 2207.04136.

3 Jannik Kossen*, Karl Stelzner*, Marcel Hussing, Claas Voelcker, and Kristian Kersting. "Structured Object-Aware Physics Prediction for Video Modeling and Planning". In: *8th International Conference on Learning Representations*. 2020. eprint: 1910.02425.

SKILLS

Statistical Analysis

Machine & Deep Learning

Software Engineering

AI Model Deployment

Project Management

TECH STACK

Python   TensorFlow

PyTorch   Java   C++

C#   SQL   Docker   Git

Linux   Tableau   Spark

COURSEWORK

Graduate Level
- Machine Learning
- Statistical Machine Learning
- Machine Learning Theory
- Deep Learning for NLP
- Deep Learning: Architectures and Methods
- Seminar on Data Mining
- Analysis of Algorithms
- Mathematical Tools for Theoretical Computer Science
- Robot Learning
- Programming Massively Parallel Processes (CUDA)
- Multithreading in C++

Undergraduate Level
- Programming 1 & 2 (incl. Algorithms)
- Software Engineering
- Development of Application Systems
- Databases
- Networking and Operating Systems

EXPERIENCE

Digitalization Research Scientist
— BASF SE

📅 01 2019 – 12 2020   📍 Ludwigshafen, DE

Statistics, machine learning and AI in research and development: Data Science for material science research

- Responsibilities: Collaborate with experts in chemistry and machine learning; statistical consulting and data analysis; ideate and propose new research projects; manage projects and internal project budgets; develop and deploy state-of-the-art production-ready machine learning solutions; consult in projects with academic partners
- Provided Bayes-opt hyperparameter tuning methods to speed-up standard ML deployment cycle across departments
- Developed and deployed convolutional neural networks to automate large-scale visual inspection of adhesives
- Developed a method for volume estimation from images using computer vision tools to facilitate chemical analysis
- Consulted in a project on the intersection of quantum chemistry & machine learning between the TU Berlin and BASF

Junior Business Solution Consultant - Senior Project "Next Generation Business Architecture"
— BASF Business Services GmbH

📅 09 2017 – 12 2018   📍 Ludwigshafen, DE

Supporting project management activities

- Responsibilities: General project management tasks; requirement engineering and development of high-level testing structure; scheduling of tasks and deadlines; organization of collaboration with external developers
- Led the development of a company-wide reporting tool to communicate efforts and advancements of the main project

Junior Business Solution Consultant - Smart Data Team in Advanced Business Analytics
— BASF Business Services GmbH

📅 09 2016 – 08 2017   📍 Ludwigshafen, DE

Supporting data science for business applications

- Responsibilities: Evaluate and experiment with (back then) new technologies including e.g. Apache Spark; assist in the setup of hardware infrastructure; assist in the development of machine learning solutions
- Development of a social media analysis tool and developed general data visualizations for internal business partners

Dual Studies International Business Administration & Information Technology
— BASF Business Services GmbH

📅 08 2013 – 08 2016   📍 Ludwigshafen, DE

TEACHING

Teaching Assistant for CIS625: Theory of Machine Learning
— University of Pennsylvania

📅 Fall 2022

Office hours; created homework and solutions; graded assignments, advised on final projects

Teaching Assistant for CIS522: Deep Learning
— University of Pennsylvania

📅 Spring 2022

Lead a study group of 12 people; facilitated discussion and elaborated on course content; graded worksheets; advised on final projects; office hours

Lecture Series on Machine Learning for Chemists
— BASF SE

📅 Winter 2020

Developed a short lecture series on machine learning for non-computer scientists (e.g. chemists) to enable colleagues to better engage in technical discussions.

SERVICE

Conference Reviewing

- International Conference on Learning Representations (ICLR) 2024
- Conference on Neural Information Processing Systems (NeurIPS) 2023
- International Conference on Machine Learning (ICML) 2023

Workshop Reviewing

- Goal-Conditioned Reinforcement Learning, Conference on Neural Information Processing Systems (NeurIPS) 2023
- Tackling Climate Change, International Conference on Learning Representations (ICLR) 2022