Zhenghua Bao

Student

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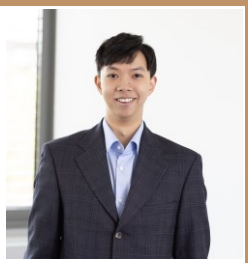

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PROFILE

I am currently pursuing a Master's degree in Computer Science, with practical experience in deep learning and software development across both frontend and backend. My strong interest in AI, Deep Learning, Machine Learning, and Large Language Models is bolstered by foundational knowledge and practical implementations gained through my academic coursework and various internships.

EDUCATION –

Master of Science (M.Sc.) in Computer Science
Technical University of Darmstadt, Germany
April 2023 – Present
Current GPA: 1,44

Master of Science (M.Sc.) in Internet and Web-based Systems
Technical University of Darmstadt, Germany
April 2022 – Present
Current GPA: 1,45

Bachelor of Science (B.Sc.) in Computer Science
Technical University of Darmstadt, Germany
October 2018 – April 2022
Current GPA: 1,71

EXPERIENCE

Working Student – Software Developer

komuno GmbH, Hedderichstraße 108-110,
60596 Frankfurt am Main
June 2022 – Present

- Agile development and management of a digital platform for municipal loans, including work on Frontend (Angular, TypeScript, HTML, CSS) and Backend (C#, LINQ, SQL).
- Supported the implementation and integration of a new platform design using Angular and Kendo UI.
- Regularly performed code reviews and verified code reliability within the development team.
- Created demo data for testing purposes to simulate realistic usage scenarios.
- Formulated and executed test cases (including unit, Cypress, and regression tests).
- Actively participated in the entire product process, from planning through implementation to reviewing project progress (SCRUM).

Student Assistant - AC3Net

Technical University of Darmstadt, Karolinenplatz 5,
64289 Darmstadt
April 2022 – February 2024

- Actively participated in the student research project AC3Net: Autonomous Communication in Cooperative Computer Networks (https://github.com/jw3il/graph-marl).
- Developed several MARL environments and GNN models. Reimplemented existing RL algorithms like DQN in PyTorch for training and testing processes.
- Visualized research results, including line charts and heatmaps, using Matplotlib and Seaborn.
- Contributed to scientific discourse and co-authored a paper accepted for publication at the AAMAS 2024 conference.

SKILLS –

Programming Languages

Python	●●●●●
TypeScript	●●●●●
Java	●●●○○
C#	●●●○○
JavaScript	●●○○○
PHP	●○○○○

Frameworks

Angular	●●●●●
PyTorch	●●●●●
React	●●●○○
TensorFlow	●●●○○

DevOps

Git	●●●●●
GitLab	●●●●●
Microsoft Azure	●●●●●
Docker	●●○○○
Jira	●●○○○

IDEs and Tools

Visual Studio	●●●●●
Visual Studio Code	●●●●●
Jupyter Notebook	●●●●●
SQL Server Management Studio	●●●●○
Postman	●●●○○
IntelliJ	●●○○○
Google Colab	●●○○○

Languages

Chinese	●●●●●
German	●●●●●
English	●●●●●

Others

HTML	●●●●●
CSS	●●●●○
SQL	●●●●○
Virtual Machine	●●●○○
Ubuntu	●●○○○

PROJEKTS

Master Thesis – Integration of Multi-Agent Reinforcement Learning in Dynamic Networks

February 2024 – September 2024

Technologies: Python, PyTorch, GNN, DQN, Gymnaium API, NetworkX, Matplotlib, Git

- Investigated and integrated existing literature to enable predictions in dynamic MARL networks without retraining.
- Designed and implemented new model architectures and environments, as well as defined observation and action spaces for various approaches, with experiments on virtual machines.
- Implemented two SL methods to verify the feasibility and effectiveness of the designed models, including classification and regression tasks.
- Analyzed and compared the performance of developed solutions with visualization of results.

UKP-SQuARE - Semantic Search

October 2022 – April 2023

Technologies: Python, Bing Web Search API, Trafilatura, Faiss

- Successfully integrated the Bing Web Search API into the UKP-SQuARE project for real-time information retrieval.
- Analyzed existing project code components and used Python packages to cleanse security-sensitive data from web information.
- Modified the frontend design to allow users personal selection of data stores.
- Conducted performance evaluations of the enhanced system with pretrained models and compared it to the existing system.

Seminar – UKP Large Language Models

April 2023 – September 2023

- Researched and analyzed current LLMs.
- Presented findings from scientific publications.
- Actively participated in peer presentations and discussions on the advantages and disadvantages of the technologies.

PUBLICATIONS

Weil, J., **Bao, Z.,** Abboud, O. & Meuser T. (2024). *Towards Generalizability of Multi-Agent Reinforcement Learning in Graphs with Recurrent Message Passing.* AAMAS 2024.
DOI: https://doi.org/10.48550/arXiv.2402.05027