Raffael Leon Schön

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EDUCATION

Philipps-Universität Marburg, Marburg, Germany 11/2020 – 08/2023
Master of Science, Computer Science and Business
Thesis: "Bat Identification in Audio Data using Deep Learning" at the research group for Distributed Systems and Intelligent Computing

WHU – Otto Beisheim School of Management, Vallendar, Germany 09/2017 – 08/2020
Bachelor of Science, International Business Administration
Thesis: "Deriving a Sentiment Time Series from Newspaper Articles Using Natural Language Processing for oil price forecasting" at the chair of Econometrics and Statistics in cooperation with Radenbrock GmbH

Southern Methodist University, Dallas, United States of America 08/2019 – 12/2019
Exchange semester at the Cox School of Business

SCIENTIFIC PROJECTS

Formalizing the Rules of the Road in First-Order Logic Using Large Language Models
Raffael L. Schoen, Kostadin Cholakov, Stefan Zwicklbauer and Daniel Baer
Publication at the Workshop on Logic Representation of Traffic Rules (LoReTra) at the 19th International Conference on Artificial Intelligence and Law - ICAIL 2023

DNA coding scheme implementation in Python
Scientific project in cooperation with Heider Lab as part of a two-semester module
Implementation of a data coding scheme in Python for encoding data into synthetic DNA. For the coding scheme, a special subclass of Reed Solomon codes was used and applied in a concatenated fashion. After completion, the project is expected to result in a scientific publication and the coding scheme will be open-sourced. A standalone version of the Generalized Reed Solomon code used can be found on my GitHub.

System and method for translating natural language traffic rules into formal logic for autonomous driving (In submission, Application Number: 22193634.7)
EU Patent developed in cooperation with Continental AG
The patent outlines a machine learning system with which traffic rules can be automatically translated into a symbolic representation. This symbolic representation can then be evaluated by an autonomous vehicle in order to make driving decisions

WORK EXPERIENCE

Continental AG, Frankfurt, Germany 04/2022 – 04/2023
Working student, Research and Development, Artificial Intelligence
- Participated in the AI Knowledge research project resulting in one published workshop paper and one patent application in the area of knowledge representation
- Investigated symbolic representations of knowledge for autonomous driving
- Researched how statements can be converted into logic formulas using LLMs
- Trained and Finetuned NLP models (GPT-2, T5) on AWS servers using PyTorch
- Worked on new approaches for dataset generation using LLMs

Philipps-Universität Marburg, Marburg, Germany 11/2021 – 04/2023
Student research assistant, Distributed Systems and Intelligent Computing
- Contributed in the Nature 4.0 research project in the area of bat detection on video
- Implemented machine learning models for animal detection in images and videos
- Applied various techniques from computer vision for animal tracking on videos
- Trained multiple detection models on a Linux server using TensorFlow and OpenCV

Deloitte, Frankfurt, Germany 04/2021 – 03/2022
Working student, Software engineering, Financial Advisory Analytics
- Supported development of an internal data visualization library using TypeScript
- Measured and optimized the runtime of functions in the library resulting in it being able to interactively visualize up to 10 million data points
- Developed and maintained data visualization classes in the library
- Assisted development of complex Angular web visualizations using the internal library

Philipps-Universität Marburg, Marburg, Germany 10/2021 – 02/2022
Teaching Assistant for Statistics
- Graded the weekly exercise submissions and exams
- Examined weekly code submissions in R
- Gave weekly exercise-focused classes and class review to students

Ernst & Young, Eschborn, Germany 01/2020 – 08/2020
Working student, Software engineering, Team Visual Analytics
- Performed development of an internal data visualization library using JavaScript
- Improved time complexity of functions in a frontend relational database
- Created a 3D web UI using JavaScript and CSS for analytics web application
- Refactored the frontend relational database to a Web Assembly module in C++

Hummingbird GmbH, Melbourne, Australia 05/2019 – 08/2019
Intern, Business Intelligence
- Built an analytics system for the company displaying all business relevant KPIs
- Constructed a data warehouse to store the data from multiple sources
- Transformed the data in SQL to one dimension to make it useable for Tableau
- Modelled multiple KPIs of the business in Tableau based on the imported data

Levity AI GmbH, Vallendar, Germany 05/2018 – 07/2018
Intern, Software engineering, Business development
- Supported the founding team in setting up the company
- Programmed multiple Webcrawlers in python for data collection
- Assisted training and implementation of multiple machine learning models

EXTRACURRICULAR ACTIVITIES

SMU Robotics Club, Dallas, Texas 08/2019 – 12/2019
Team member
- Worked on data transmission between drone and computer

Junge Bürger (political youth-party), Bad Homburg, Germany 07/2016 – 12/2018
Managing Director

Bürgerliste, Bad Homburg (political party), Bad Homburg, Germany 11/2016 – 01/2018
Part of the managing committee

MISCELLANEOUS

IT Skills	Python, Typescript, Rust, C++, R, SQL, VBA, Linux, Computer Vision, Natural Language Processing, Machine Learning, Docker, Git, AWS, HTML, CSS
Frameworks	React, TensorFlow, PyTorch, Django, Transformers, Autograd, Scipy, OpenCV
Languages	German (native language), English (C2), Mandarin (A1)
GitHub	https://github.com/raeudigerRaeffi
Hobbies & Interests	Weightlifting, Snowboarding, Machine Learning, Video games, Board games, Reading