Parth Sanepara

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Education

Boğaziçi University — Istanbul, Turkey

B.Sc. in Electrical and Electronics Engineering; ***GPA: 3.62/4.00*** — *Sep 2018 – Jun 2023*

Minor Degree in Computer Engineering; ***GPA: 3.58/4.00*** — *Oct 2020 – Jun 2023*

National University Admission Exam (YKS): Ranked 75^{th} in Mathematics and Science among ca. 2.3 million candidates with a test score of 489.92/500. (Jul 2018)

Skills

Languages: C/C++, C#, Java, Python, Go, JavaScript, SQL, Scala, MATLAB, R

Technologies: Django, Node.js, React.js, MySQL, MongoDB, Git, Docker, Amazon Web Services, Kubernetes, Google Cloud Platform, Unity, Linux, ROS, OpenCV, Scikit-Learn, PyTorch, Keras, TensorFlow

Work Experience

SemperTech — Istanbul, Turkey

Software Engineer — *Sep 2023 – Present, Full-time*

- Currently working on the "Arçelik Digital Home Energy" project in a collaborative effort with DAI-Labor at the Technical University of Berlin under the supervision of Prof. Dr. Şahin Albayrak.
- Simulated data exchange processes with the EEBUS protocol suite using C# and Go frameworks. Migrated the entire framework from Go to C++ in order to ensure future adaptability for smart home IoT devices.

SESTEK Speech Enabled Software Technologies — Istanbul, Turkey

AI Research and Development Intern — *Jan 2022 – Feb 2022, Internship*

- Implemented various NLP tasks, including NER, POS tagging, sentiment analysis, text classification, and extractive/generative QA using transformers and Hugging Face libraries. Conducted a literature review on information retrieval and reading comprehension to stay updated on the state-of-the-art ML models.
- Developed a generative question answering system with Dense Passage Retrieval and Retrieval-Augmented Generation techniques using the Haystack framework on Python.
- Worked on a Turkish open-domain question answering system by fine-tuning a BERT base model transformer with PyTorch. Evaluated exact match and F1 scores using different Turkish data sets and DeepMind's XQuAD data set and then tabularized the evaluation results.

Research Experience

Max Planck Institute for Intelligent Systems — Stuttgart, Baden-Württemberg, Germany

Undergraduate Researcher — *Jun 2022 – Aug 2022, Internship*

- Worked in the Robotics, Collectives and Learning subgroup at the Physical Intelligence Department with former Ph.D. students Sinan Özgün Demir and Alp Can Karacakol on a project about 3D printing and heat-assisted magnetic programming of soft machines under the supervision of Prof. Dr. Metin Sitti.
- Implemented an Arduino Mega driver for controlling a fluid dispenser, a laser, thermocouples, and a coil set. Updated ROS nodes for parsing G-codes and controlling stage movement and built the ROS-Arduino communication network to simulate a 3D printing and magnetic programming process with Python.
- Designed the project's system and software architecture, algorithm flowchart, and state machine diagram. Implemented and debugged ROS nodes by validating each corresponding hardware component functions correctly.

Nanonetworking Research Group, Boğaziçi University — Istanbul, Turkey

Undergraduate Researcher — *Oct 2021 – Jun 2022, Part-time*

- Worked on the project "Design and Implementation of Molecular Communication Systems Using Index Modulation" under the supervision of Prof. Dr. Ali Emre Pusane.
- Simulated the Brownian motion of molecules in a SISO MCvD system and predicted simulation parameters such as receiver radius, diffusion coefficient, and transmitter-receiver distance using CNNs with Keras and TensorFlow.
- Ran Monte Carlo simulations of the Gaussian model to encode/decode randomized binary sequences in a SISO MCvD system using BCSK modulation technique and calculated the bit error rate on Z-channel.