

# Aras Güngöre

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## EDUCATION

### Boğaziçi University

*B.Sc. in Electrical and Electronics Engineering; GPA: 3.62/4.00*

*Minor Degree in Computer Engineering; GPA: 3.58/4.00*

Istanbul, Turkey

*Sep 2018 – Jun 2023*

*Oct 2020 – Jun 2023*

## SKILLS

**Programming:** C/C++, C#, Java, Python, Go, JavaScript, MySQL, MATLAB, R, Git, Docker, ROS

**Libraries:** OpenCV, Scikit-Learn, PyTorch, Keras, TensorFlow, NumPy, Pandas, Matplotlib, Seaborn

**Languages:** Turkish (Native), English (Professional), German (Elementary)

## WORK EXPERIENCE

### SemperTech

*Software Engineer*

Istanbul, Turkey

*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. Converted the entire framework from Go to C++ in order to ensure future adaptability for smart home IoT devices.

### Scale AI

*Prompt Engineer*

San Francisco, California, United States (Remote)

*Jul 2023 – Sep 2023, Freelance*

- Developed effective Turkish prompts for diverse AI tasks and maintained a high standard of prompt quality and consistency across different competencies, adhering to established guidelines and best practices.
- Engaged in collaborative meetings with cross-functional teams and project coordinators, actively seeking guidance, addressing queries, and collectively brainstorming strategies to generate higher quality prompts.

### SESTEK Speech Enabled Software Technologies

*AI Research and Development Intern*

Istanbul, Turkey

*Jan 2022 – Feb 2022, Internship*

- Implemented common NLP tasks using transformers such as named-entity recognition (NER), part-of-speech (POS) tagging, sentiment analysis, text classification, and extractive/generative question answering with Hugging Face libraries.
- Built a generative question answering system via Dense Passage Retrieval (DPR) and Retrieval-Augmented Generation (RAG) using the Haystack framework with Python.
- Worked on a custom Turkish open-domain question answering system by fine-tuning a BERT base model transformer. Evaluated the exact match and F1 scores using different Turkish data sets and compared the evaluation results.

## RESEARCH EXPERIENCE

### Max Planck Institute for Intelligent Systems

*Undergraduate Researcher*

Stuttgart, Baden-Württemberg, Germany

*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.
- Updated a ROS package for converting 3D motion controller events to ROS messages so that it synchronously operates at any given loop rate with C++.
- 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.

- 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.
- Plotted the arrival of molecules per symbol duration in a SISO MCvD system using Binomial, Poisson, and Gaussian model approximations with MATLAB.
- 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 (BER) on Z-channel.

## AWARDS & ACHIEVEMENTS

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**High Honors Degree:** Awarded to Bachelor alumni who have graduated with a GPA greater than or equal to 3.50 by Boğaziçi University. (Jul 2023)

**TÜBİTAK 2247-C Intern Researcher Scholarship:** Awarded to undergraduate students who take part in research projects carried out by the Scientific and Technological Research Council of Turkey (TÜBİTAK). (Dec 2021 – Jun 2022)

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

**KYK Outstanding Success Scholarship:** Awarded to undergraduate students who have been ranked in the top 100 on National University Admission Exam by Higher Education Credit and Hostels Institution (KYK). (Sep 2018 – Jun 2023)

**Boğaziçi University Success Scholarship:** Awarded to undergraduate students who have been ranked in the top 100 on National University Admission Exam by Boğaziçi University. (Sep 2018 – Jun 2023)

## PROJECTS

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### Filters and Fractals | [GitHub](#)

- A C project which implements a variety of image processing operations that manipulate the size, filter, brightness, contrast, saturation, and other properties of PPM images from scratch.
- Added recursive fractal generation functions to model popular fractals including Mandelbrot set, Julia set, Koch curve, Barnsley fern, and Sierpinski triangle in PPM format.

### CMPE 250 Projects | [GitHub](#)

- Five Java projects assigned for the Data Structures and Algorithms (CMPE 250) course in the Fall 2021-22 semester.
- These projects apply DS&A concepts such as discrete-event simulation (DES) using priority queues, Dijkstra’s shortest path algorithm, Prim’s algorithm to find the minimum spanning tree (MST), Dinic’s algorithm for maximum flow problems, and weighted job scheduling with dynamic programming to real-world problems.