Doruk Tan Atila

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Summary: Electronic engineering graduate with 1st Class Honours, various projects and research experiences. Passionate about **hardware design** and **embedded systems** with a niche interest in **neuromorphic computing**.

Education

Electronic Engineering — *Bachelor of Engineering* Sept 2021 - December 2024
The University of Manchester, Manchester, UK 1st Class Honours
- Relevant coursework: Digital System Design, Computer Systems Architecture, VLSI Design, C Programming, Microcontroller Engineering 1&2, Embedded Systems

High School Diploma Sept 2016 - June 2021
The American Robert College of Istanbul, Turkey GPA: 88.03/100

Publications

A Novel Approach to Modelling of MOS Devices – Development of a Simulation Tool for MOSFET Analysis 2024
Available in GitHub
- Undergraduate final year dissertation project
- Skills: **MOSFET**, **Modelling**, **Solid State Physics**, **Simulation**, **C++**

"Organic phototransistors and their applications as artificial synapses," Sens Actuators A Phys, vol. 371, p. 115311, 2024, doi: https://doi.org/10.1016/j.sna.2024.115311. 2024
Published in Sensors and Actuators A: Physical
- Skills: **Research**, **Materials Science**, **Organic Electronics**, **Artificial Synapses**, **Neuromorphic Computing**, **Spin-coating**, **PVD**, **OFET**

Projects

Undergraduate Final Year Project — *MOSFET Modelling and Simulation* Sept 2023 - May 2024
- Derived a MOSFET model from quantum-mechanical semiconductor physics foundations and built a standalone C++ program capable of simulating the output and transfer curves of a MOSFET with manufacturing parameters.
- Skills: **C++**, **Qt**, **MOSFET**, **Solid State Physics**, **Modeling**, **Simulation**, **Semiconductor Device**, **OFET**

Coursework — *Organic Phototransistor Array for Infrared Imaging* May 2024 - May 2024
- Designed an organic phototransistor array for infrared imaging using a conjugated polymer from literature, incorporating filter arrays to detect NIR, SWIR, MWIR, and broadband wavelengths for precise detection of specific infrared bands.
- Skills: **Sensor Design**, **Signal Conditioning**, **Imaging Sensors**

Coursework — *Cache Simulator* Apr 2024 - Apr 2024
- Coded a cache simulator capable of simulating given memory trace file for different cache configurations.
- Skills: **C**, **Cache**, **Simulation**

Coursework — *Concurrent Systems* Nov 2023 - Nov 2023
- Coded a simulation of a four-by-one hundred-meter sprint relay race. The project involved creating threads, synchronizing threads, and ensuring thread safety.
- Skills: **C++**, **Multithreading**, **Simulation**

Coursework — *Microcontroller-Peripheral Communication I2C/SPI* Nov 2023 - Nov 2023
- Programmed STM32F401RE microcontroller using low-layer C libraries to enable data transfer between the controller and peripherals.
- Skills: **Embedded Systems**, **C**, **SPI**, **I2C**, **Keil uVision**

Embedded Systems Project — *Line Following Buggy* Sep 2022 - June 2023
- Programmed STM32F401RE microcontroller to create a line-following buggy. The system gathered data from six light sensors, determined the line's position, and adjusted the motor speed to center the line using PID control.
- Skills: **Embedded Systems**, **C++**, **STM32**, **Algorithms**

Coursework — *VLSI Design* May 2023 - May 2023
- Designed a 250nm technology CMOS schematic and layout of a circuit. Optimized the circuit for given speed/power requirements and passed DRC and LVS checks. The circuit implemented a logic boolean expression with 3 inputs.

- Skills: **Tanner EDA**, **Calibre**, **CMOS**, **Very-Large-Scale Integration**

PuzzleThon — ***Line Following Buggy*** Apr 2023 - Apr 2023
- Programmed Nvidia Jetson Nano for a line-following buggy. The algorithm captured front-facing video, processed the image to detect line contours, and utilized PD motor control to align the line as closely as possible to the middle of the buggy.
- Skills: **Python**, **Robot Operating System (ROS)**, **Embedded Systems**, **Image Processing**

Coursework — ***VHDL Stopwatch*** Nov 2022 - Nov 2022
- Programmed an FPGA in VHDL to implement a functional stopwatch.
- Skills: **FPGA**, **VHDL**, **Finite State Machine**

Destination Imagination Tournament — ***Building a Cargo Carrying Drone*** Jan 2018 - Jan 2019
- Built a quadcopter capable of carrying cargo as part of the "Destination Imagination" competition Technical category. My team earned 1st place in Turkey.
- My main responsibility was the cargo carrying. To do that, I have coded 2 Arduino boards and connected them via a Bluetooth sensor. One Arduino sent a Bluetooth signal to the Arduino on board which activated/deactivated the electromagnet on the drone. This allowed the drone to carry/drop metal-attached cargo.
- The skeleton was made by cutting spare metal parts. Flight controller hardware pieces were bought, connected, and modded.
- Skills: **Drones**, **Arduino**, **Microcontrollers**, **Embedded Systems**, **Python**, **Cabling**, **Problem Solving**

Work Experience

Arcanor - Istanbul, Turkey — ***Data Analyst/Business Developer*** May 2022 - June 2023
- Optimized SQL queries and developed an algorithm to query cross-country mobility data
- Coordinated various tasks as part of a startup team, working extensively in product development, documentation, website management, Google services, translation
- Skills: **Data Analysis**, **Project Management**, **SQL**, **Startup Management**, **Google Services**

Softtech Software Technologies R&D - Istanbul, Turkey — ***Intern*** June 2019 - July 2019
- Wrote and implemented a Python code for automated and manual drone controlling
- Trained a pattern recognition algorithm in Python to identify a medical disease with software development team members
- Skills: **Simulation**, **Linux - Ubuntu**, **Embedded Systems**, **Python**, **Machine Learning**

Skills

- Programming Languages: Verilog, VHDL, Assembly, C, C++, Python, CUDA, MATLAB with Simulink, Mbed, SQL
- Software Tools: NI LabVIEW, Tanner EDA Tools, Calibre Verification, Altium Designer, Keil uVision
- Technical skills: Research, Cleanroom Practices, PVD, Spin-coating, Photolithography, Electrical Characterizations

Certifications

- Accelerating CUDA C++ Applications with Concurrent Streams Feb 2023
- Fundamentals of Accelerated Computing with CUDA C/C++ Jan 2023