YUSUF HUSSEIN

3rd Bachelor of Engineering Technology
Electronics and ICT

OBJECTIVE

As far as I can remember, I've had a passion for all things electronics and programming. From hardware design to robotics to AI, I'm always looking for some new technology to learn about. I hope that during and after my time at Group T I will continue to learn about all the current and new technologies, and I am looking for new opportunities to achieve that goal.

WORK EXPERIENCES

STUDENT TEACHING ASSISTANT • COMPUTATIONAL THINKING • 2023
Assisted with the lab sessions for the course on Computational Thinking, helping many students learn the fundamentals of programming and build a strong problem-solving methodology for programming problems in the Python programming language.

STUDENT TEACHING ASSISTANT • PROGRAMMING TECHNIQUES • 2024
Assisting with the lab sessions for the Programming Techniques course and helping students develop a deeper understanding for more complex programming abstractions and patterns, in addition to assisting them in developing android applications in the Java programming language to gain experience using these concepts.

TECHNICAL SKILLS

- Experience building projects with Python, Java, JavaScript, Typescript, PHP, C++, C, and C#, Kotlin, MySQL, MongoDB, Node.js, ReactJS, Unity, NumPy, Pandas, PyTorch, REST APIs.
- Microcontrollers such as the ATMEGA and the STM series, using C, C++, and Assembly languages.
- Experience with the Xilinx/Vivado FPGA development pipeline with Verilog on a Zynq FPGA.
- Experience with Ubuntu, Debian, and Kali Linux.
- Experience designing and implementing analog and digital signal filtering and processing schemes.
- Experience building IOT devices running on Raspberry Pi's and Microcontrollers such as the STM8 and ESP32.

EDUCATION

BACHELOR OF ENGINEERING TECHNOLOGY – ELECTRONICS AND ICT • STARTED 2021 • KU LEUVEN
Currently Ongoing.

PROJECTS

LIL-GRAD • AUTOGRAD ENGINE • 2023
An extension of the Micrograd engine, Lil-Grad is a backpropagation based autograd engine built in Python using NumPy with the ability to operate on both scalars and matrices. It can be used to train simple neural networks.

BONTEMPSBOT • DISCORD BOT • 2023
A discord bot designed to provide many features to its users, including live updates on activities occurring via the Riot REST API, and tracking last seen times for users present on the server.

CPID • PID CONTROL LIBRARY • 2024
A discrete-time PID control library written in C, designed to be used on a microprocessor to control actuators accurately and efficiently.

PROJECTS

MULTIPLE ANDROID APPLICATIONS • ANDROID STUDIO • 2023
For the course on programming techniques, I developed a full android app written in Java on Android Studio in collaboration with another student, with an API integration featuring an SQL database to manage the application's data. Additionally, I developed an Android App in Kotlin for a private client to streamline the management of Wi-fi Routers and allow users to access and interact with the Router via a simple interface to modify Router settings and configurations.

MAZE SOLVER • ROBOTICS PROJECT • 2023-2024
Designed and built a robot which can map out and solve a grid-based maze it is placed in and takes instructions over a REST API to move items between positions in the maze. It contains a modular maze solving library which can be used for other purposes and can be easily reprogrammed to perform many different tasks.

SIMTM8 • STM8 EMULATOR • 2024
Currently Ongoing, developing a STM8 emulator in C++ which is currently capable of emulating some of the STM8's capabilities, and can process STM8 bytecode directly.

FASTARITHMETIC • VERILOG ARITHMETIC DESIGNS • 2024
Designed and developed a suite of optimized arithmetic adders and multipliers in Verilog for usage with a Xilinx (AMD) Pynq FPGA, for analyzing the various differences in logic delays and area efficiency between the many different circuits.

SMALLNERUON • JS AUTOGRAD ENGINE • 2024
Similar to Lil-Grad, SmallNeuron is a backpropagation autograd engine built in pure Typescript. It was designed for use in web-environments in order to easily visualize and interact with neural network concepts. It operates on scalar tensors and has a flexible and granular torch-like API.


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