Mahmoud Abdelhadi

Electrical Engineering Student · ***University of British Columbia***

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TECHNICAL SKILLS

Industry Knowledge	Software Skills	Hardware Skills
Oscilloscope/Signal generator	C, C#, Python	Assembly language
AutoCAD/SOLIDWORKS	SQL/HTML	Verilog/VHDL
Soldering	GitHub	PCB/Microcontrollers
Agile/waterfall methodology	MATLAB	FPGA & ASIC

EDUCATION

University of British Columbia, Canada
Expected graduation date: 2024

Bachelor of Applied Science - Electrical Engineering

Co-op: Available for 4 or 8 months beginning May 2022

TECHNICAL WORK Experience

Tutankhamun FC, Egypt — Machine Learning Engineering Intern
May 2021 - August 2021

Professional football club in Fayoum, Egypt

- Collect in-game data to Excel Spreadsheet
- Data cleaning and feature engineering in Python using numPy and pandas
- Implemented SVM, KNN, Random Forest and Logistic regression models to predict game outcomes

Technologies used: Excel, Python and Sklearn

TECHNICAL PROJECTS

Armed Parcel Pad
September, 2021 – Present

Creating a parcel pad meant to arm in 30 seconds and ring alarm if package is removed without disarming

- Employed the engineering design process with teammates to formulate design alternatives for 5 major design aspects and evaluate each alternative using design matrices and sensitivity analysis
- Collaborated with teammates for the engineering & integration of PCB design and the programming of microcontroller chip to follow 9 functional requirements, 4 non-functional requirements, and 3 constraints
- Facilitated communication and collaboration between teammates to assure progress by fulfilling scrum-master position; Guided the team to meet 95% of sprint goal deadlines
- Presented progress to stakeholders and client on a weekly basis

Amazoom automated warehouse full-stack development
November, 2021 – December, 2021

- Implemented a front-end GUI using CSHTML & SQL; Client functionality consists of a network of warehouses, shopping cart functionality, Administration portal, tiered authorization & authentication, databases, and cache
- Employed C# to program a multi-threaded backend; Implemented automatic robot delivery system, anti-collision system & battery dis/charge simulation, resulting in a project grade of 106.5%
- Cooperated with a team on implementation of various backend functionalities; Improved truck delivery and restocking system, warehouse mapping, and item placement
- Authored various design documents including use-case, sequence, object interaction, and sequence diagrams

Voice communication system simulation and implementation
June 2021 – August 2021

- Engineered error Encoding/decoding and forward error correction for entire system by utilizing FEC algorithms, reducing bit-error rate from 10^{-2} to 10^{-5}
- Implemented entire stretch goal, consisted of coding a complex reader which samples intel flash memory, with backwards playing, pausing, and restarting audio features, resulting in an 8% increase in team's grade
- Programmed and delivered system level performance analysis and MATLAB simulation to assess end-to-end bit error rate, complexity, latency, and power usage to verify system design objectives were fulfilled

- Redesigned various system blocks to accomplish consistent definition of interfaces between all blocks; tested final integration of entire system to ensure complete execution

Implementation of various projects on FPGA
October, 2019 – April, 2021

- Reduced Instruction Set Computer (RISC) machine - 16-bit CPU which accepts keyboard inputs, has cache pages, RAM, arithmetic-logic unit, and a program counter to execute 16 instructions

Technologies used: *Verilog, datapath, ARM8 assembly, Interrupt Service Routines, temporal cache*

- Talking calculator - Functioning calculator that vocalizes inputs and result by outputting phonemes

Technologies used: *Verilog, KCPSM3 assembly, C, 8B/10B enc/decoding, PicoBlaze embedded processor*

- RC4 Decryption algorithm - Quad Core RC4 decryption system that cycles through every possible key to a decrypted message and communicates with other cores until a valid encryption is achieved and key is found

Technologies used: *Verilog, Parallel computations, algorithmic state machines, On-chip debugging*

- Basic iPod implementation – Music playing device with noise level indication with start, stop, reverse, restart, speed-up & speed-down functionality

Technologies used: *Verilog, PicoBlaze embedded processor, KCPSM3 assembly*

Implementation of various projects on Breadboard
January, 2021 – April, 2021

- Cup Capacitor - Cup that announces volume of water contained in increments of 5% with 2% accuracy
- Metal Detector - Differentiates between strong or weak ferrous and non-ferrous metals from 5 cm distance
- Temperature tracking device - Real-time device that measures, records, and plots surrounding temperature with 10% accuracy

Technologies used: PIC32/EFM8, C, Python, mosfets, BJTs, op-amps, microchips, 8051 assembly, oscilloscope

ENGINEERING STUDENT TEAMS

UBC Rocket Student Design Team
September 2019 – September 2021

Member of ground support equipment team for Co-Pilot sub-team

- Developed SolidWorks skills while prototyping various parts and disks for water jet cutting/3D printing
- Remodeled Test stand electrical systems housing compartment and wiring schematics to contain PLC, relays, and other electrical components by employing Autodesk and SolidWorks
- Gained experience in various workshop tools while modeling, manufacturing, and assembling Co-pilot test stand in a sub-team of 20; Engineered test stand that is being operated for liquid engine hot fires
- Engaged in Agile development utilizing a test-driven approach while cooperating with project managers and other members; Identified potential problems and recommended suitable solutions

AWARDS

UBC International Major Entrance Scholarship
2018 – Present

Awarded a merit-Based $96,000 scholarship given to top international students for outstanding academic achievement and extracurricular contributions

UBC BASC Dean's Honor List
2020 – 2021

Edexcel A-level High achiever's Award
2018

IINTERESTS

- Scuba-Diving (Advanced open water PADI diver certified)
- Powerlifting
- Volleyball/Football

Principal Component Analysis (grade: 95%) February 2022 – March 2022

- Used logistic regression to predict the class label of images using the principal components representation of the images
- examined how the classification error changes with the number of principal components used.