HAMZA KAMEL

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EDUCATION

Purdue University, West Lafayette, IN   May 2025
Master of Science in Electrical and Computer Engineering
Concentration: Innovative Technologies
Purdue University, West Lafayette, IN   May 2023
Bachelor of Science in Computer Engineering

TECHNICAL SKILLS

- Programming Languages and Tools: Git, GitHub, C, C++, Rust, Java, JavaScript, TypeScript, Bash Script, Assembly Language, Python, Machine Learning, AI, System Verilog, MATLAB, HTML, CSS, and TCP/IP
- Language: Fluent in reading, writing, and speaking Arabic
- General Skills: Microsoft 365 Proficiency, Accountability, Adaptability, Attention to Detail, Creative Problem-Solving, Stress Management, Openness to Feedback, and Continuous Improvement

PROFESSIONAL EXPERIENCE

Advanced C Programming, Purdue University   August 2022 – December 2022
Undergraduate Teaching Assistant
- Enhanced and sustained proficiency in C programming by guiding approximately 200 Computer Engineering students through regular office hours, fostering their understanding of programming concepts
- Strengthened students' problem-solving skills by reviewing C content and preparing them for homework and exams
- Curated student questions to improve tutoring solutions discussed in weekly staff meetings

Neurava, Purdue Research Park, Startup Company Backed by Purdue University   May 2022 – August 2022
Firmware Engineering Intern
- Manufactured new firmware for a smart wearable device capable of tracking the vital signs of people at risk of SUDEP (Sudden Unexpected Death in Epilepsy) to give advanced warning
- Programmed in C and Python to establish real-time communication with the microcontroller using radio frequencies, ensuring consistent data updates
- Tested SPI frequencies through trial and error to acquire the most consistent results with the fastest running time and conclusively identified the 2.048 MHz SPI frequency as optimal due to its exceptional code performance
- Utilized I2C and SPI to interface with various chips for real-time physiological data acquisition

PROJECT EXPERIENCE

Machine Learning for Bioinformatics and Healthcare, Purdue University   January 2024 – May 2024
- Conducted a comprehensive assessment of YOLO-based image processing algorithms utilizing the Br35H dataset, comprising human brain MRI images classified into four classes: glioma, meningioma, no tumor, and pituitary
- Implemented YOLO frameworks for brain tumor detection, navigating challenges such as outdated dependencies and incorrect imports sourced from GitHub repositories associated with research paper

Aqua-Check, Master's Project Track, Purdue University   August 2023 – May 2024
- Led a six-member team for Aqua-Check, overseeing software goals, data selection, and core programming functions
- Conducted extensive research on bioimpedance values, specifically focusing on the relationship between bioimpedance and total body water, with emphasis on parameters such as resistance (R) instead of reactance (Xc)
- Implemented gradient boosting algorithms (Linear Regression, XGBoost, LightGBM) in Python to estimate individual total body water (TBW) content in kilograms and determine their corresponding hydration category

Digital Systems Senior Design, Purdue University   August 2022 – December 2022
- Incorporated a CC1310 microcontroller and coded instructions in C using Code Composer Studio
- Developed SPI, UART, and Radio protocols to operate concurrently, facilitating the creation of changing light effects on programmable light strips through seamless communication and by setting SPI to a high speed of 2.4 MHz
- Created a robust transmission system for radio communication between a central controller and receivers, efficiently sending 135 bytes of data at each trigger, enabling dissemination of diverse light effects to multiple receivers

LEADERSHIP EXPERIENCE

Eta Kappa Nu (HKN), IEEE Honor Society
General Member   December 2023 – Present
- Actively contributed to the academic and professional development of myself and fellow HKN members

Purdue Engineering Outreach (PEO), Organization Teaching Engineering Concepts for K-12
President   April 2022 – May 2023
- Oversaw club funds, relations, activities, and events, fostering an inclusive environment for teaching engineering concepts bi-monthly to children from diverse backgrounds