

TITUS HYUNKYU LEE

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EDUCATION

University of Virginia, School of Engineering and Applied Science, Charlottesville, VA

August 2023 - Present

B.S. in Electrical Engineering and Computer Engineering, Minor in Business.

- Major GPA: 4.0/4.0, Cumulative GPA: 3.93/4.0.
- Recipient, A. James Clark Scholars Program at UVA, Clark Scholar (one of 17).
- Activities: Theta Tau Professional Engineering Fraternity, Computer Network and Security Club, Mechatronics and Robotics Society.

Study Abroad Program: UVA in Guatemala

Summer 2024

- Studied engineering and public health aspects such as power plants, infrastructure, healthcare, potable water, sanitation, environment, and education, and examined the influence of economic, political, cultural, and historical factors on these aspects.

PROJECTS

Boost Converter Circuit - Hardware

Fall 2024

- Designed and implemented a boost converter circuit to step up a 5V supply voltage to a stable 14.11V output with a 1 kHz PWM signal and 78% duty cycle. Leveraged Multisim simulations to validate functionality and performed precise calculations to optimize component values, ensuring reliable energy storage and effective voltage regulation under load.
- Completed the full design cycle, including creating a PCB layout in KiCad with a footprint of 50x50 mm, ordering and verifying manufacturability of the PCB through freedfm.com, and soldering over 10 components. Validated the circuit's performance under load conditions, demonstrating proficiency in circuit analysis, energy storage, and experimental methods.

8-bit Central Processing Unit (CPU) - Hardware

Fall 2024

- Designed and constructed an 8-bit CPU in VHDL using Quartus, featuring a 5-bit address bus, 32 memory locations, R/W control signals, and an asynchronous reset. Developed a hierarchical architecture including an opcode decoder, instruction sequencer, and ALU, enabling operations such as load, store, add, subtract, and conditional branching.
- Programmed and tested assembly code to validate CPU functionality using Quartus' simulation tools and a custom testbench. Verified data integrity across all 32 memory locations and optimized the design for efficient signal timing and minimal resource utilization.

Soccer (EPL) Match Predictor - Software

Summer 2024

- Devised an English Premier League (EPL) Match Predictor using a Random Forest Classifier, achieving an accuracy and precision score of approximately 0.7 by employing hyperparameter tuning and handling class imbalance through oversampling techniques.
- Implemented a comprehensive web scraper to collect match data from the previous five seasons, enabling real-time predictions for upcoming matches and enhancing the model's predictive performance.

Wordle Solver - Software

Summer 2024

- Engineered a sophisticated Wordle Solver in Python, leveraging information theory concepts such as entropy and probability calculations to optimize guessing strategies, achieving high efficiency through parallel processing.
- Devised an interactive simulator demonstrating the solver's effectiveness with detailed statistical insight, yielding an average of 3.60 guesses per word after conducting 1,000 comprehensive simulations.

SKILLS

- Programming: Python, Java, JavaScript, React, Bash, x86 Assembly, C, VHDL.
- Simulation Tools: AutoCAD, Fusion 360, NI MultiSim, Quartus.
- Languages: English (Native), Korean (Native), Tagalog (Basic), Swahili (Basic).

RELEVANT COURSEWORK

- Electronics, Signals and Systems, Machine Learning, Embedded Computer Systems, Applied Circuits, Digital Logic Design, Computer Systems and Organization, Data Structures and Algorithms, Discrete Mathematics and Theory, Mathematics of Information.

OTHER EXPERIENCE

Mentor, **Computer4Kids**, Charlottesville, VA

August 2024 - Present

- Provided one-on-one mentoring to middle school students in STEM education and engineering, guiding through hands-on projects, fostering technical skills, and encouraging problem-solving and teamwork.

Library Circulation Assistant, **Clemons Library**, University of Virginia, Charlottesville, VA

August 2024 - Present

- Assisted patrons with checking out materials, answering questions, and providing basic IT support at the main desk. Managed the organization and re-shelving of returned items while working flexible shifts, including weekends and late nights.

AWARDS AND RECOGNITIONS

- Honors: High School Valedictorian (2023), Graduated High School with High Honors (2023).
- Awards: Faith Academy STEM Award (2023), John Philip Sousa Award (Band Musicianship Award, 2023), AP Capstone Diploma (2023), AP Scholar with Distinction Award (2023), AP Scholar with Distinction Award (2022).