Terence Zeng

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Education

University of Illinois Urbana-Champaign Expected Graduation Date: December 2025

Bachelor of Science in Computer Engineering, Minor in Mathematics

- **GPA**: 4.0 (Dean's List, James Scholar, Robert E. Lepic Electrical Engineering Scholarship)
- **Relevant Coursework**: Data Structures, Algorithms and Models of Computation, Operating Systems, Computer Systems and Programming, Artificial Intelligence, Digital Systems Laboratory (FPGA), Digital Signal Processing

Experience

Course Assistant, ECE 374 (Algorithms and Models of Computation) August 2024 – Present

ECE Department, University of Illinois Urbana-Champaign

- Facilitated weekly office hours to support students in developing a deeper, intuitive understanding of algorithms
- Offered personalized guidance and created original examples to help students build problem-solving skills
- Graded students' assignments and provided feedback on clarity and accuracy of solutions

Embedded Software Engineering Intern May 2024 – August 2024

Midea America Corporation (Fortune Global 500) - Louisville, KY

- Developed embedded software to interface temperature, humidity, and weight sensors with Arduinos using I2C protocol and custom DAC programming in C++, enhancing data accuracy by 25% and improving responsiveness
- Designed algorithms that reduced the magnitude of spin phase oscillations in washers, improving stability
- Prototyped circuit layouts and assisted in formulating patents in the research and development department

Intern July 2023

Guotai Junan Investments

- Automated parsing of options trading data to streamline decision-making and improve workflow efficiency
- Integrated tools such as Python, OpenPyXL, Pandas, and BeautifulSoup with internal email system

Projects

Real-Time Speech Vocoder on FPGA | *SystemVerilog, Vivado*

- Designed a vocoder on a Spartan-7 FPGA, modifying and pitch-shifting speech with approximately a 100ms delay
- Calculated coefficients for band-pass FIR filters using FFT(Fast Fourier Transform), then modulated sine waves
- Converted mic input from 1-bit pulse-density modulation format to 8-bit pulse-code modulation, then to PWM
- Interfaced communication between various IP blocks with AXI protocol

Website Portfolio | *HTML, CSS, JavaScript*

- Utilized HTML, CSS, and JavaScript to create website featuring projects and experience
- Includes resolution-adaptive image gallery with transitions, light/dark mode switch, popup boxes, etc.

Machine Learning Facial Analysis Displayed on LED Matrix | *TensorFlow, OpenCV, Google MediaPipe*

- Consolidated microcontroller, LED system, and programs to develop project for Engineering Open House
- Detects facial features and emotional state of subjects and displays infographic on an embedded LED matrix, using tools such as TensorFlow, OpenCV, and Google MediaPipe computer vision framework

Computerized Simulation of Binary Black Hole Trajectory | *NumPy, Matplotlib*

- Developed a Python (with NumPy, Matplotlib) program that simulated path of binary black hole system by calculating metrics such as energy and radii over time using data from LIGO observatory

Technical Skills

Languages: Python, SystemVerilog, C, C++, Assembly (RISC-V), Java, JavaScript, HTML, CSS
Tools: Git, Linux, Vivado, Vitis, Visual Studio, Google Cloud, PyCharm, IntelliJ, Eclipse, Quartus, Docker
Libraries: PyTorch, TensorFlow, OpenCV, NumPy, SciPy, MatPlotLib, Pandas, BeautifulSoup, OpenPyXL

Activities

- UIUC Competitive Math - ranked top 10 in UIUC undergraduate math contest, AIME qualifier x 5, HiMCM finalist
- Earthquake Engineering Research Institute - AutoCAD specialist, committee member
- Open-Source @ Illinois - Engineering Open House Project - hardware subteam
- Association for Quantitative Trading Education