Jacob Ray

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EDUCATION

Seattle Pacific University, College of Arts and Sciences Seattle, WA
Bachelor of Science in Computer Engineering (GPA 3.99/4.0) Expected Graduation: June 2026

- Relevant Coursework: Data Structures, Computer Organization and Assembly Language, Electric Circuits, Microcontroller System Design, Calculus, Vector Calculus, Differential Equations, Linear Algebra, Discrete Mathematics
- Awards and Accomplishments: Dean's List (2022 - 2024)

TECHNICAL SKILLS

- Oscilloscope, Multisim, Soldering, Verilog, MATLAB, Object Oriented Programming (C++/Java), C, Python, MIPS Assembly, VS Code, Visual Studio, Git, Quartus Prime

RELEVANT EXPERIENCE AND PROJECTS

Bandpass Filtering Circuit February - March 2025

- Designed and optimized a 4th-order Sallen-Key bandpass filter for an IR system, tuned to 17 kHz with at least -12 dB attenuation at 10 kHz and 25 kHz.
- Integrated a peak detector and comparator to detect passing signals and trigger an LED indicator.
- Validated circuit performance using Matlab Bode plots, AC sweeps in Multisim, and oscilloscope waveform analysis with a function generator.

Heart Rate Monitor System (*https://github.com/JRay350/Heart-Monitor*) December 2024

- Enabled real-time health monitoring by utilizing an STM32 Cortex-M4 microcontroller to process analog heart rate signals and transmit to PC for analysis
- Reduced dependency on third-party software and achieved 100% system control by custom-developing essential microcontroller drivers (GPIO, RCC, USART, ADC) in C programming language
- Improved data collection flexibility and user experience by implementing programmable sampling controls, allowing users to start/stop monitoring sessions based on their needs

AI Cat Feeding System (*https://github.com/JRay350/Cat-Feeder*)
Seattle Pacific University, WA April 2024 - June 2024

- Optimized the edge computing hardware costs by 90% through the development of a low-power AI system, leveraging Python and TensorFlow Lite on Raspberry Pi 4 with custom 3D-printed housing
- Eliminated unwanted wildlife feeding and food waste by engineering an intelligent detection system and training the CNN (Convolutional Neural Network) model, achieving 84.2% accuracy in real-time classification between cats and raccoons using computer vision
- Designed real-time user feedback by spearheading cross-functional development of fail-safe hardware interfaces, implementing stepper motor control, LED indicators, OLED display drivers, and system reset protocols

LEADERSHIP AND VOLUNTEER EXPERIENCE

AI Student Lab Co-Founder June 2024 - Present
Seattle Pacific University, WA

- Developing an AI-powered surveillance system to accelerate campus security response
- Spearheading a student-led lab dedicated to FPGAs and GPUs for AI
- Co-authored a proposal to Intel Corp. with university faculty to secure a $17K FPGA donation