Nicholas LaVine

327 Halket Street, Pittsburgh, PA 15213
610-513-7120 nicklavine@icloud.com linkedin.com/in/nicholas-lavine-84b54a290 github.com/NAL1618

Education

University of Pittsburgh **August. 2022 – May 2026**
Bachelor of Science in Computer Engineering *Pittsburgh, PA*

Relevant Coursework

- Performance Computing
- Computer Networks
- Information Security
- Computer Vision
- Software Construction
- Computer Organization
- Advanced Digital Design
- Embedded Systems

Experience

Ohodnicki Lab **November 2024 – August 2025**
Machine Learning and Integration Intern *Pittsburgh, PA*

- Developed and trained a convolutional neural network (CNN) to detect and classify defects in industrial pipelines.
- Engineered a Python-based graphical user interface (GUI) to automatically ingest pipeline data (.csv, .mat) and generate real-time 2-D waveforms, 3-D pipeline models, and live updating signal displays.
- Integrated the CNN into the GUI to enable on-demand damage classification and predictive analytics.

Ohodnicki Lab **August 2025 – April 2026**
Embedded System Integration Intern *Pittsburgh, PA*

- Collaborated with Sofar Ocean to integrate the Bristlemouth development kit with custom optical sensor interrogators for data collection and transmission.
- Developed Python software enabling efficient SPI/UART communication between the development board and custom hardware, ensuring reliable bidirectional data transfer.
- Achieved robust real-time data communication between optical sensor interrogators and the development kit, supporting scalable field deployment.

Projects

Artificial Intelligence Poker Coach | *Python, Machine Learning, Hardware/Software Integration* **September 2025**

- Collaborating in a 4-person team to build an AI-driven poker system integrating machine learning, computer vision, and custom hardware.
- Trained a supervised learning model (MLP) on collected poker hand histories to predict optimal actions, enabling the AI to generalize strategies from real game-play data.
- Coordinated with teammates developing the custom MCU hardware and computer vision modules to ensure smooth integration of AI predictions with real-time game-play.

Cross-Platform Casino Themed Application | *Kotlin Multi-Platform, iOS, Android* **April 2025**

- Developed a mobile casino app with slots, blackjack, poker (AI poker bot design), and roulette, using Kotlin Multiplatform for shared backend logic.
- Built Android UI with Jetpack Compose and iOS UI with Swift/SwiftUI, ensuring consistent game mechanics across platforms.
- Packaged the shared backend as an XCFramework for iOS, resolving Gradle/Xcode integration challenges for smooth deployment.

Custom Pipelined CPU in VHDL | *VHDL, Vivado, Pipelining* **March 2025**

- Designed and implemented a multi-cycle CPU in VHDL with a six-state FSM control unit supporting instruction fetch, decode, execute, memory access, and write-back.
- Integrated datapath components including ALU, register file, instruction register, memory, and multiplexers, with control signals for proper operation.
- Implemented support for arithmetic, logical, memory, and branching instructions.

Technical Skills

Languages: Python, Java, C, C++, C#, Swift, Kotlin, MATLAB, VHDL, and Assembly
Developer Tools: VS Code, Xcode, Android Studio, IntelliJ, Vivado, Kiel, Oracle VM, and Geany
Technologies/Frameworks: GitHub, Gradle, Linux, Raspberry Pi, Arduino, FPGAs, Tensorflow/Pytorch

Leadership / Extracurricular

Club Wrestling **Fall 2022 – April 2026**
Co-Captain *University of Pittsburgh*

- Created a welcoming environment for all members regardless of skill levels within the sport. Organized weekly practices for club members and secured a good practice space for the club.