Henry Jochaniewicz

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EDUCATION

University of Notre Dame | Notre Dame, IN (Expected) May 2027
Bachelor of Science | Major: Computer Science | Minor: Theology GPA: 4.0

Relevant Coursework: Systems Programming, Computer Architecture, Theory of Computing, (Abstract) Algebra, Topology, Compilers and Language Design, Operating Systems, Introduction to Artificial Intelligence

WORK EXPERIENCE & LEADERSHIP

École Centrale de Lyon | Lyon, France May 2025 – July 2025
Undergraduate Researcher

- Extracted data from 11+ papers on AES hardware accelerators to compare to an under-development AES chip, and demonstrated trends between throughput, power, and area by generating 16 graphs with Python and automating the process with Google Colab
- Described an application of the 1FeFET-1C cell, an emerging memory technology, through a modified bit cell for the SubBytes step of encryption to improve AES accelerator area and performance with another undergraduate student
- Presented formal summary of contributions to 30 PhD students and advisor with graphs shown at sponsor presentations

College of Engineering | Notre Dame, IN August 2024 – Present
Undergraduate Teaching Assistant

- Provided tailored feedback and office hours for 50 second-year students while coordinating with 4 TAs in Discrete Mathematics
- Assisted 100+ students in labs and office hours with learning C, Vim, and the command line in Fundamentals of Computing

Domer Rover Engineering Design Club | University of Notre Dame September 2023 – Present
Sub-Team Lead: Radio and Communications May 2024 – May 2025

- Led sub-team to build communications system for the University Rover Challenge with 9 other leads, spending 4–15 hours/week
- Researched antennas and transceivers, established dual-band wireless connection between rover and base station at distances up to 1 km, and successfully performed driving and video communication at long range
- Engineered a functional client-server connection over serial 900MHz frequency to transfer photos, driving controls, and status signals via self-designed message-based data encoding through techniques such as threading and weighted round-robin scheduling
- Earned a Technician Amateur Radio License through the FCC for the club, callsign KE9AZR

Team Member: Radio and Communications September 2023 – May 2024

- Programmed client-server connection with Python to establish communication between Raspberry Pi and PC over 2 months

Kilwins | Arlington Heights, IL July 2022 – January 2025
Senior Staff

- Provided friendly service during 100+ customer lines for ice cream while working with other staff, and trained new hires

TECHNICAL PROJECTS

Interpreters | Personal Project May 2025 – August 2025

- Developed two interpreters for the same dynamic, object-oriented language to learn the process and architecture beneath programming language implementations via the textbook *Crafting Interpreters* by Robert Nystrom
- Produced first interpreter in Java that scans, parses, and interprets inputted programs through abstract syntax trees to learn simple interpreter techniques, with features like control-flow, closures, classes, lists, and anonymous functions in a 19-file codebase
- Coded second interpreter in C that single-pass compiles input to bytecode and interprets via a stack-based, garbage-collected virtual machine with optimizations like string interning to achieve an average 3.39-times speedup over the above interpreter

Process Queue Shell | Course: Operating Systems Principles September 2025 – September 2025

- Constructed a shell in C that adds and runs user-inputted processes via FIFO, round robin, or multi-level feedback queue scheduling policies with techniques to simulate the operating system's scheduler on multiple cores

NFAs, Regular Expression Matcher, sed | Course: Theory of Computing January 2025 – May 2025

- Built a nondeterministic finite automaton simulator in Python with 3 others to reduce time complexity of a regex matcher
- Created a sed-like string editor with the regex matcher above to prove sed is Turing-complete via a Turing machine simulator
- Implemented backreferences in the regex matcher to prove backreferences are NP-complete via a satisfiability solver simulator

Fragment Shaders | Personal Project July 2024 – August 2024

- Designed 19 fragment shaders in GLSL of Voronoi diagrams, the Mandelbrot set, and shape transformations by implementing techniques such as shaping functions, cellular noise, and fractal Brownian motion to understand GPU programs

SKILLS, LANGUAGES, & HOBBIES

Technical: C, Python, Java, GLSL, ZeroMQ, Bash, Git, Vim, Visual Studio Code, IntelliJ, Google Colab, Processing, React, Excel
Languages: English (fluent), Italian (proficient), French (basic)
Hobbies: Origami, piano (self-taught), cult-classic movies (e.g. Hitchcock, Studio Ghibli), reading, video games (e.g. *Outer Wilds*), running