Henry Jochaniewicz

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EDUCATION

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

Saint Viator High School | Arlington Heights, IL | *Valedictorian* May 2023

Related Coursework (Current)
Systems Programming, Discrete Mathematics, Logic Design and Sequential Circuits, Data Structures, Linear Algebra, (Abstract) Algebra, Computer Architecture, Theory of Computing, Real Analysis, Compilers and Language Design, Operating Systems, Introduction to AI

WORK EXPERIENCE & LEADERSHIP

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

- Extracted and benchmarked data of AES hardware accelerators from 11+ papers to compare to under-development AES chip
- Produced graphs to demonstrate trends of above data with Python and automated the process with Google Colab
- Described an application of 1FeFET-1C cells to an AES accelerator via a modified bit cell for SubBytes step of encryption
- Presented formal summary of contributions to 30 PhD students and advisor, with graphs shown at sponsor presentations

University of Notre Dame | Notre Dame, IN August 2024 – Present
Teaching Assistant / Grader, Undergraduate

- Provided tailored feedback, office hours, and coordinated with 4 TAs for 50 second-year students for Discrete Mathematics
- Oversaw 15 first-year students with detailed comments on each homework assignment for Seminar Magic of Numbers

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

- Led team to build communications system for the University Rover Challenge spending 4 to 15 hours per 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 send photos, driving controls, and status signals via original message-based data encoding through techniques such as threading and weighted-round-robins
- 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 to apply to a Raspberry Pi and PC over a 2-month period

Kilwins (Ice Cream and Confectionary) | Arlington Heights, IL July 2022 – January 2025
Senior Staff

TECHNICAL PROJECTS

Interpreters | Personal Project May 2025 – August 2025

- Developed two interpreters for a dynamic, object-oriented language following textbook *Crafting Interpreters* by Robert Nystrom
- Engineered first interpreter in Java with abstract syntax trees to parse and execute inputted programs in 19-file codebase with features like variables, control-flow, functions, closures, classes, file I/O, lists, string indexing, and anonymous functions
- Coded second interpreter in C that single-pass compiles input to bytecode and executes via a stack-based virtual machine with a garbage collector and optimizations like string interning, tagged unions, and NaN boxing, precipitating average 3.39-times speedup

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

- Built a nondeterministic finite automaton simulator in Python to speed up a regular expression parser and matcher like grep
- Created a sed-like string editor and implemented backreferences in grep, proving NP-completeness through a satisfiability solver

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, deterministic randomness, cellular noise, and fractal Brownian motion

SKILLS, LANGUAGES, & HOBBIES

Technical: C, Python, Java, GLSL, Git, Vim, VSCode, Google Colab, React
Languages: English (fluent), Italian (competent), French (conversational)
Hobbies: Origami, piano (self-taught), cult-classic movies (e.g. Hitchcock, Studio Ghibli), reading, video games, running