

# MARK V. VAN KIRK

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## Education

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### University of Notre Dame

*B.S. in Computer Science*

**Notre Dame, IN**

*Expected May 2025*

### Relevant Coursework & Self-Study Materials

- Data Structures, Theory of Computing, Operating Systems, Database Concepts, Distributed Systems, Web Development
- *The Linux Command Line, Linux Bible, The C Programming Language, Competitive Programmer's Handbook*

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## Work Experience

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### Summer Research Assistant (REU)

*University College Dublin*

**Dublin, Ireland**

*May 2024 – Current*

- Selected to conduct research on digital forensics and security through the Naughton Fellowship REU Program
- Investigated the impact of using two frequency channels on a software-defined radio (Nuand bladeRF) to perform electromagnetic side-channel attacks on a development board (Adafruit Bluefruit Feather) running AES encryption

### Teaching Assistant

*University of Notre Dame*

**Notre Dame, IN**

*Aug 2022 – Dec 2023*

- Helped students to understand data structures and algorithms for Programming Challenges, an elective focused on developing practical programming skills to solve puzzle-type problems that often appear in programming contests
- Mentored freshmen in Foundations of Theology through conversations focusing on theological content

### Summer Research Assistant (REU)

*University of Notre Dame*

**Notre Dame, IN**

*May 2023 – Aug 2023*

- Engaged in the benchmarking of current language models across different quantizations and datasets, revealing metrics (latency, number of parameters, etc.) that provide insight during the design of hardware accelerators
- Employed Docker, PyTorch, and MLPerf throughout the course of my research

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## Technical Projects

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### Web Developer

*Bullwinkle's Ordering & Service System*

**Notre Dame, IN**

*Aug 2023 – Dec 2023*

- Built a website to manage food orders at Bullwinkle's, the student-run restaurant in Dillon Hall
- Utilized Flask for the frontend with Python and SQL underneath to manage menu items, order status, and staff credentials

### Software Developer

*The Carter Center*

**Remote**

*Jan 2023 – May 2023*

- Wrote a Python program to correct Sudanese locality misspellings for the efficient documentation of vaccine distribution
- Created a custom scorer to calculate the similarity score between our standardized spellings and the transliterated ones

### Technician

*Scooter Repair Business*

**Notre Dame, IN**

*Aug 2021 – May 2023*

- Founded a business to repair electric scooters with a variety of electrical and mechanical malfunctions
- Contributed to open-source battery desulfator, a device that recovers rechargeable batteries by eliminating crystallization buildup, which involved soldering a custom circuit board and flashing code from a Raspberry Pi onto an ATmega328 chip

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## Community

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### Math Tutor

*Seeds of Hope*

**Huaraz, Peru**

*April 2024 – May 2024*

- Volunteered as a math tutor for local children from impoverished families to help them achieve academic and social success

### Cabin Counselor

*Falling Creek Camp*

**Tuxedo, NC**

*May 2022 – July 2022*

- Served as a cabin counselor for a group of eight teenage boys while teaching fly fishing and sailing as daily activities

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## Technical Skills

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**Languages:** Python, C, Java, HTML, JavaScript, CSS, Shell Scripts, Docker

**Skills:** Web Development, Data Parsing, GitHub, Natural Language Processing