Timothy J Scholtz

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Education

Ph.D. Computer Engineering, Virginia tech 2025 - Present
Research Area: Computer Architecture and Embedded Systems

Bachelor of Science, Computer Engineering, University at Buffalo GPA: 3.88 2021- 2025

Research Experiences

Location: Virginia Tech – FoRTE Lab **Date**: 2025 June – Current
Title: Research Assistant **Supervisor:** Prof. Matthew Hicks
Research Area: Computer Architectures and Low-Level Systems

- Comparing existing methodologies for designing bespoke processors with our novel approach, evaluating effectiveness, performance, and design trade-offs.

Location: Center for Computational Research **Date**: 2024 May – August
Title: Research Assistant **Supervisor:** Dr. Joseph White
Research Project: Augmenting a developmental virtual assistant to suit our team's purpose:

- Built a pipeline to generate, clean, and embed data in order to build a RAG database to supplement the support team's AI chatbot with knowledge from our team's work with an above 90% accurate answer rate
- Ran a series of embedding and query tests to research and optimize data format.
- Added features to XDMoD web portal, such as code generation to replicate charts in python environment, as well as added deep linking to usage tab for chart sharing.

Location: School of Engineering – University at Buffalo **Date**: 2023 April – August
Title: Research Assistant **Principal Investigator:** Prof. Wenyao Xu
Research Project: Developing an automated speech recording and analysis tool:

- Integrated multiple speech-to-text tools with a custom sentence-combining algorithm; improved accuracy through device testing and analysis.
- Reduced Word Error Rate by 5% via comparative evaluation of SOTA tools and custom models.
- Led weekly team meetings and presented project outcomes to the department; strengthened skills in data analysis, software development, and collaboration.

Location: School of Computer Science – University at Buffalo **Date**: 2021 December – 2022 August
Title: Research Assistant **Principal Investigator**: Dr. Weihang Wang
Research Project: Automated Detection of Compilation Differences Between Compilers

- Developed a differential software testing framework to analyze compilation discrepancies between 2 compilers, comparing behavioral output during execution and inserting hooks to help monitor their behavior.
- Tested this framework using GCC and Emscripten and was able to pinpoint inconsistencies and failures in 7% of the input software. I inspected each of the failures and categorized them into fault types for analysis.

Work Experiences

- **Teaching Assistant**: 2023 September – 2025 May

Worked as a TA for Intro to CS, Embedded Systems, Digital Systems, and Computer Organization.

- **Gravatronics:** 2021 January – April

Interned at a BMS startup. Prototyped circuits, coded scripts, managed inventory, and wrote documentation.

Clubs and Volunteering

SPCA Serving Erie County – Volunteer on a weekly basis, helping with organization and sorting
Ark Animal Shelter - Over the course of two weeks, I helped with caring for the dogs in a no-kill shelter.
STEM Field Trips - Helped run UB's hosted STEM field trip, introducing 8th graders to STEM careers.
IEEE Battlebots – Part of a team that designs and builds battles bots to complete in local competitions.
Tau Beta Pi – Treasurer for the engineering honor society, in charge of accounts and transactions

Skills

Programming Languages: Python, C, Verilog, Bash, Scala, Java, GDscript, Mips, SQL, Arm Asembly
Tools: LaTeX, Arduino, Audio Processing, MySQL, Linux, Microsoft Office tools, Git, Visual Studio, Logisim
Soft Skills: Problem Solving, Analytical, Dependability, Communication, Organization, Debugging, Self-starter
Equipment: Oscilloscope, Soldering, Microcontrollers, Test Equipment, LTspice