# Timothy J Scholtz

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## Education

**Bachelor of Science:** Computer Engineering, University at Buffalo – Member of Honors College
**Start Date**: August 2021 **Expected Graduation Date**: May 2025 **GPA**: 3.8

## Research Experiences

**Location**: Center for Computational Research **Date**: 2024 May – August
**Title**: Research Assistant **Supervisor:** Prof. 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 teams AI chatbot with knowledge from our teams 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:** Dr. Wenyao Xu
**Research Project:** Developing an automated speech recording and analysis tool:

- Integrated and modified multiple speech-to-text tools into a single program, developing a sentence-combining algorithm to improve accuracy. Conducted tests with different microphones and mm-wave recorders.
- Improved Word Error Rate by 5% through comparison study between the accuracy of cutting-edge tools, as well as our own, and analyzed the impact of recording devices on accuracy.
- Appointed to lead weekly meetings where we exchanged ideas and tracked progress and was also was nominated to present the work on behalf of our team to the entire department. This project enhanced my skills in data analysis, problem-solving, teamwork, large dataset handling, and software development.

**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 – Current

Was a TA for both an introductory CS course and a microprocessor course, ran labs, and graded papers.

- **Gravatronics:** 2021 January – April

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

## Projects

**Memory Manager**: C, Unix, Memory – Built a dynamic memory allocator supporting small applications.
**Cedar tools**: Flask, CSS, JS – Created and hosted website cedar-tools.com which provides simple dev tools

## Clubs and Volunteering

**SPCA Severing 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** – Treasure 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