Jifeng Wu

Master of Science in Computer Science

Software Practices Lab, University of British Columbia

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Education

University of British Columbia — *Vancouver, Canada*

Master of Science in Computer Science — *September 2022 - Current*

- Courses taken: CPSC 507 Software Engineering, CPSC 539L Topics in Programming Languages - AUTOMATED TESTING, CPSC 545 Algorithms for Bioinformatics, CPSC 539B Topics in Programming Languages - TYPE SYSTEMS, CPSC 548 Directed Studies
- Courses TA'ed: CPSC 410 Advanced Software Engineering

Wuhan University — *Wuhan, China*

Bachelor of Science in Software Engineering — *September 2018 - June 2022*

- Cumulative GPA: 3.93/4.00 (ranking first in my class and within the top 2% of 237 students in my major)

Publications

Journal Articles

Effective Stack Wear Leveling for NVM

Jifeng Wu, Wei Li, Libing Wu, Mengting Yuan, Chun Jason Xue, Jingling Xue, Qingan Li

IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (2023) pp. 1–1. 2023

Conference Experience

ICFP 2023 — *Seattle, Washington*

Mentee, Programming Languages Mentoring Workshop — *September 4, 2023*

The Cornell, Maryland, Max Planck Pre-doctoral Research School 2023 — *Saarbrücken, Germany*

Attendee — *August 6 - 13, 2023*

ISSTA/ECOOP 2023 — *University of Washington*

Student Volunteer — *July 17 - 21, 2023*

PNW PLSE 2023 Workshop — *University of Washington*

Presenter — *May 9, 2023*

Presented poster and lightning talk on "Automated Type Inference in Python." Link:
https://sites.google.com/cs.washington.edu/pnwplseworkshop/pnw-plse-2023

Research Experience

Stack-based Crash Reproduction — *University of British Columbia*

Mentor: Prof. Caroline Lemieux — *July 2023 - Current*

- Reproduce a software crash given a stack trace using search-based techniques.
- Try to overcome the 14 current challenges for crash reproduction proposed in "A benchmark-based evaluation of search-based crash reproduction" (https://doi.org/10.1007/s10664-019-09762-1).

Automated Type Inference for Python — *University of British Columbia*

Mentor: Prof. Caroline Lemieux — *January 2023 - Current*

- Infer types for variables in Python projects without type annotations.
- Utilizes a novel attribute-centric type inference approach: collects attributes variables should provide, and uses the attributes to infer types.

Effective Stack Wear Leveling for NVM — *Wuhan University*

Mentor: Prof. Qingan Li — *August 2021 - August 2022*

- Increase the lifespan of non-volatile memory with limited write durability by converting wear-heavy loops in programs into recursive functions.
- Implemented as an LLVM pass that is applicable to a large variety of hardware architectures, operating systems, and programming languages.

Community Detection Using Social Network and Trajectories — *Wuhan University*

Mentor: Prof. Yuanyuan Zhu — *September 2019 - June 2021*

- Given a social network and user trajectory dataset, find communities of users with both social cohesiveness and trajectory similarity.

Projects

Dynamically Inspecting Python Bytecode *University of British Columbia*

CPSC 507 Software Engineering *October 2022 - December 2022*

- Implemented a modified Python interpreter allowing user-defined callbacks to inspect Python bytecode during the execution of a program.
- Ideal for building dynamic program analysis tools for Python.
- **Technical Skills:** Python, Python C-API.
- **Soft Skills:** Reading Large Code Bases, Debugging, Presentation Skills, Report Writing.

Conference Control System Based on Gesture Recognition *Wuhan University*

The 12th Service Outsourcing Innovation and Entrepreneurship Competition for Chinese College Students *January 2021 - May 2021*

- Capture video from a computer's webcam, recognize 5 hand gestures, and use the recognized gestures to control a computer.
- **Technical Skills:** Computer Vision, Deep Learning, Concurrent Programming, PyQt5 GUI Programming.
- **Soft Skills:** Teamwork, Modeling, Debugging, Presentation Skills, Report Writing.

Effective Search of Gadgets in the "Attack Lab" Experiment *Wuhan University*

Computer Systems: A Programmer's Perspective *December 2020*

- Wrote a Python function to disassemble the executable and enumerate all gadgets within the executable.
- Designed a scheme to store gadgets within a Pandas Dataframe to enable rapid queries.
- Used Exploratory Data Analysis to find all possible gadgets that could be exploited to complete a given task.
- **Technical Skills:** Python with Pandas.
- **Soft Skills:** Modeling, Exploratory Data Analysis, Presentation Skills, Report Writing.

Traffic Scene Smart App *Wuhan University*

The 9th China Software Cup *April 2020 - August 2020*

- A computer vision based application that can identify motor vehicles, non motor vehicles, pedestrians and the license plates, brands, orientations and colors of motor vehicles, monitor traffic flow, as well as record traffic violations.
- **Technical Skills:** Computer Vision, Deep Learning, Concurrent Programming, PyQt5 GUI Programming.
- **Soft Skills:** Teamwork, Modeling, Presentation Skills, Report Writing.

Scholarships

2021 **2020-2021 Annual Outstanding Student Scholarship**, Wuhan University
2020 **2019-2020 Annual Outstanding Student Scholarship**, Wuhan University
2019 **2018-2019 Annual Outstanding Student Scholarship**, Wuhan University

Honors

2021 **2020-2021 Annual Advanced Individual of Social Work**, School of Computer Science, Wuhan University
2021 **2020-2021 Annual Outstanding Student**, Wuhan University
2020 **2019-2020 Annual Advanced Individual of Social Work**, Wuhan University
2020 **2019-2020 Annual Merit Student**, Wuhan University
2019 **2018-2019 Annual Merit Student**, Wuhan University

Awards

2021 **Third Prize**, The 12th Service Outsourcing Innovation and Entrepreneurship Competition for Chinese College Students
2020 **Second Prize**, The 9th China Software Cup

Skills

Programming C++ (STL, Boost, Template Metaprogramming), Python (z3, multiprocessing, NumPy, Pandas, Matplotlib), Shell.
Operating Systems Linux, macOS, Windows.
Software Adobe software (Photoshop, Illustrator, Premiere, etc.), Office software (Word, PowerPoint, Excel)
Soft Skills Teamwork, Planning, Modeling, Problem-solving, Documentation, Communication, Presentation.

Languages

English Professional proficiency (TOEFL: 116/120, GRE: 335/340)
Chinese Native proficiency