Hamid Fathi

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EXPERIENCE

C++ Developer & Computer Algebra Researcher   Sep. 2022 - Present
ORCCA, Computer Science Department, Western University, Canada
Supervisor: Dr. Marc Moreno Maza

- Implemented an efficient thread pool in C++ with a work-stealing scheduler for multicore architectures, outperforming Cilk-based multithreading and eliminating external dependencies.
- Developed a fast power series multiplication module using Karatsuba method and dynamic programming in the *BPAS library*, achieving a significant speedup over the existing lazy evaluation approach.
- Designed and implemented a C++ object-oriented package to manipulate power series for enhanced modularity and reusability.

R&D Intern   May. 2024 - Aug. 2024
Maplesoft, Waterloo, Canada

- Developed the double-description method (polyhedral sets) in C++ as a shared library for the Maple software.

C++ Software Engineer   Jun. 2020 - Jul. 2022
MAPSA Technology Center, Tehran, Iran

- Researched peer-reviewed literature to identify and implement efficient algorithms for software modules.
- Developed a high-performance computation engine in C++ and Qt-based UI using the MVC design pattern.
- Performed unit and integration testing, bug-fixing, and profiling to enhance software reliability and performance.
- Collaborated in an agile team, using Scrum and Azure DevOps to optimize CI/CD and project outcomes.

Scientific Computing Researcher   Mar. 2019 - Sep. 2020
Sharif University of Technology, Tehran, Iran

- Designed and implemented finite element simulation software, incorporating advanced numerical methods and algorithms for solving systems of PDEs in complex domains.
- Implemented parallel computing techniques using OpenMP and CUDA to accelerate computational fluid dynamics simulations.

Teaching Assistant
Computer Science Department, Western University, Canada

Delivered lectures, held lab sessions, and evaluated student assignments and projects for the following courses:

- Operating Systems (Winter 2024)
- C++ Object-Oriented Design and Analysis (Fall 2023)
- Discrete Structures for Computing (Winter 2023)
- Software Tools and Systems Programming (Fall 2022)

SKILLS

Languages: C/C++, Fortran, Python, bash, Maple, MATLAB
Parallel Computing: C++ Multithreading, pthreads, OpenMP, CUDA
Tools: Git, svn, Qt, Jira, make, CMake, gdb, perf, Valgrind

PUBLICATIONS

- Fathi, Seyed Abdol Hamid, *Efficient Algorithms and Parallel Implementations for Power Series Multiplication* (2024). Electronic Thesis and Dissertation Repository. 10337. https://ir.lib.uwo.ca/etd/10337

EDUCATION

M.Sc. in Computer Science   Sep. 2022 - Present
Western University, London, Canada   *GPA: 4/4*
- Relevant Coursework: Analysis of Algorithms, Distributed Systems, Parallel Computing

M.Sc. in Engineering   Sep. 2018 - Sep. 2020
Sharif University of Technology, Tehran, Iran   *GPA: 4/4*

B.Sc. in Engineering   Sep. 2014 - Jul. 2018
Petroleum University of Technology, Ahwaz, Iran   *GPA: 3.92/4*