Dastan Abdulla

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Education

B.S. in Computer Science, University of Pittsburgh Aug 2020 - Apr 2024

- Relevant courses: Data structures & Algorithms, Discrete Structures, Computational Linguistics, Computer Vision, Computer Organization & Architecture, Compiler Design, and Systems Software.

B.S. in Mathematics, University of Pittsburgh Aug 2020 - Apr 2024

- Relevant courses: Differential Calculus, Integral Calculus, Multivariable Calculus, Theoretical Mathematics, Abstract Algebra, Linear Algebra, Game Theory, and Differential Equations.

Minor in Linguistics, University of Pittsburgh Aug 2020 - Apr 2024

Experience

Accipiter Systems May 2022 - Present

Software Engineering Intern - Carried out research and driver development for PCIe NIC devices.

- Developed and documented Linux driver modules for PCIe switch devices in tandem with Linux Non-Transparent Bridge (NTB) modules utilizing Direct Memory Access (DMA) using C, x86 Assembly, and Bash.
- Developed AI/ML using PyTorch and OpenCV for classification and detection in distributed systems.
- Researched and implemented multi-threaded architectures for network and distributed applications.
- Adopted Six Sigma and Agile processes for development and continuous improvement.
- Performed network analysis and vulnerability testing using Wireshark, Scapy, NumPy, Pandas, and Iperf3.

University of Pittsburgh Aug 2021 - Present

Undergraduate Teaching Assistant - Organized labs, recitations, tutoring services, and class activities.

- TA for three courses: Discrete Structures, Intermediate Programming, and Computer Organization & Architecture.
- Directed office hours to aid more than 100 students with homework and assignments for class.
- Taught MIPS assembly, digital logic schematics in Logisim, and object-oriented programming in Java.

Skills

Programming - Java, C/C++, Rust, Python, x86 Assembly, MIPS Assembly, Javascript, SQL, NoSQL, and Matlab.
Libraries/Frameworks - Wireshark, Iperf, CUDA, PyTorch, Tensorflow, Scikit, OpenCV, NLTK, Pandas, and NumPy.
Version Control - GitLab, Github and Subversion (SVN).
Writing - LaTeX, HTML, CSS, XML, and Markdown.
Languages - Kurdish (native), English (fluent), and Arabic (fluent).
Software - Linux, Office 365, Blender, and Adobe.

Projects

Advanced Calculus Solver

Wrote a Java functional calculator that can integrate and derive functions with complex and nested expressions.

- Modelled a recursive Quadrature Method to compute definite integrals of transcendental functions.
- Implemented symbolic differentiation functionality capable of handling transcendental functions.
- Completed an adaptive time-step Fourth-Order Runge-Kutta algorithm to solve differential equations, the same algorithm used in Matlab's ODE solver, which is 4x more accurate than the standard Euler Method.

Digital CPU Core Emulator

Created an entire 16 bit Harvard CPU architecture design using a Simple Sequential Execution (SSE) model.

- The project is equipped with memory read/write functionality and executing jump/branch conditional instructions.
- Designed the schematics for the ALU, Control, Program Counter, Register File, and Memory.
- Engineered the ALU to support addition, subtraction, multiplication, and division along with the binary operations.

Extracurricular

Math in CS Branch Jan 2021 - Present

Founded the Math in CS Branch of the Computer Science Club at the University of Pittsburgh

- Invented a responsive website for the branch using JavaScript, CSS, and HTML with support for advanced animations.
- Introduced resources and opportunities to the 80+ members by scheduling events and inviting guest speakers.

Vex Robotics Competition Sep 2017 - Mar 2020

Managed and directed team members for 3 seasons of the Vex Robotics Competition working on hardware and software.

- Programmed an A9 Cortex controller using C and C++ for robot functionality, control, and movement.
- Developed and documented an odometry system for the autonomous phase using PIDs and Control Theory.