Banin Abrar

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SKILLS

LANGUAGES & TOOLS

- Proficient in C, C++, Perl, Python, Shell with working knowledge of Intel SIMD, i.e. SSE, AVX, and AVX2
- Experienced with Flask, Git, SVN, RHEL, LaTeX , HTML, CSS and basic familiarity with AWS (EC2 and S3).
- Exposure to Digital Design through Verilog, VHDL and Schematic.

INTERESTS

- Backend Development, Algorithm Optimization, Physics Simulation, Automotive Technologies

EXPERIENCE

IDT | Algorithm Engineer
Jan 2018 – Apr 2018 | Waterloo, ON

- Worked on IDT's H.265 software encoder team, to increase the execution speed and resource efficiency of its encoder.
- Implemented Intel's AVX Intrinsics on top of existing C-code, allowing for more optimized encoder load distribution over multiple CPU cores. Pixel metadata collection speed increased by a factor of 4, over default GCC auto-vectorization.
- Analyzed potential benefits of using 512-bit instructions on memory intensive operations inside IDT's x86 mainframe.
- Worked on the Hardware Design Team to optimize pipeline designs in an FPGA using Verilog. Tasked with determining optimal register placements in order to improve circuit timing. Reduced total negative slack by 30 percent.
- Wrote git automation scripts to improve overall SSH compatibility in the internal git workflow of the company.
- Worked on projects using Agile Development, with the help of SCM tools like JIRA.

PROJECTS

FSEARCH | Python
Upcoming Project

- FSearch is a storage-efficient extended fuzzy search algorithm.
- Trie implementation to store words coupled with the frequency of use. Inspired by Peter Norvig's Research Post
- Use of Damerau–Levenshtein distance over general LD algorithm to allow for consideration of sequence transpositions.

SMART-CANE | C++
Oct 2017

- Smart-Cane is a walking stick designed for the visually-impaired.
- Simulated a proximity sensor through by utilizing data collected from a short-range ultrasonic sensor.
- Designed circuit to automate the process of data collection and implemented an alarm system to warn the user of the cane, in case of close proximity to obstacles.
- Generated MIPS compatible instructions for the IoT board, through cross-compilation of C++ code.

EDUCATION

UNIVERSITY OF WATERLOO | Candidate for B.A.Sc in Honours Computer Engineering
Expected Apr 2022 | Waterloo, ON

- President's Scholarship of Distinction (2017)

Relevant Coursework

• Fundamentals of Programming (ECE 150) • Discrete Mathematics and Logic 1 (ECE 108)
• Digital Circuits and Systems (ECE 124) • edX Computer Science (CS50)
• Programming in C++ (New Horizons)