Sajjad Taheri

Contact Information

3099 Donald Bren Hall,
University of California, Irvine
Irvine, CA 92617

Cell: (949)-690-3484
E-mail: sajjadt@uci.edu
Web: https://sajjadt.github.io
GitHub: https://www.github.com/sajjadt

Education

University of California, Irvine (School of ICS), Irvine, CA

P.hD. in Computer Science 2013-2019 expected

University of Tehran (School of ECE), Tehran, Iran

B.Sc. and M.Sc. in Computer Engineering 2005-2013

Research Interests

Programming Languages and Compilers
Web Technologies
Computer Vision Acceleration

Professional Experiences

UC Irvine, Irvine, CA

Graduate Student Researcher Sep 2014 to present

- FPGA Acceleration of Data-flow-based Computer Vision Algorithms
- High-performance Computer Vision Processing for the Open Web Platform
- Performance Assessment of WebRTC implementations

Mozilla, Mountain View, CA

JavaScript Engineeing Intern Jun 2015 to Sep 2015

- Improved SIMD support for SpiderMonkey JavaScript engine
- Vectorization of gl-matrix library with SIMD.js

Conference Papers

[1] **S. Taheri**, P. Behnam, E. Bozorgzadeh, A. V. Veidenbaum, A. Nicolau, "AFFIX: Automatic Acceleration Framework for FPGA Implementation of OpenVX Vision Algorithms", ACM/SIGDA Symposium on Field-Programmable Gate Arrays (FPGA) 2019.

[2] **S. Taheri**, J. Heo, P. Behnam, A. V. Veidenbaum, A. Nicolau, "Acceleration Framework for FPGA Implementation of OpenVX Graph Pipelines", IEEE Field-Programmable Custom Computing Machines (FCCM) 2018.

[3] **S. Taheri**, A. V. Veidenbaum, A. Nicolau, N. Hu, and M. Haghighat, "OpenCV.js: Computer Vision Processing for the Open Web Platform", ACM Multimedia Systems (MMSys) 2018.

[4] P. Behnam, B. Alizadeh, **S. Taheri**, M Fujita, "Formally analyzing fault tolerance in datapath designs using equivalence checking", Asia and South Pacific Design Automation Conference (ASP-DAC) 2016.

[5] **S. Taheri**, L. Beni, A. V. Veidenbaum, A. Nicolau , R. Cammarota, Jianlin Qiu, Qiang Lu and M. Haghighat, "WebRTCBench: Performance Assessment of WebRTC Implementations", ACM/IEEE Embedded Systems for Real-time Multimedia (ESTIMEDIA) 2015.

Magazine Articles

[6] **S. Taheri**, A. V. Veidenbaum, A. Nicolau, N. Hu, and M. Haghighat, "Computer Vision for the Masses: Bringing Computer Vision to the Open Web Platform", Intel Parallel Universe Magazine, April 2018 issue. Syndicated by EE Times.

Other

[7] **S. Taheri** Bringing the Power of SIMD.js to gl-matrix, Mozilla Hacks Blog, 2015.

Presentations

Improving OpenVX Application Development and Optimization Process for FPGAs
Systems, Intel, Santa Clara. May 2017

Teaching and Mentoring Experiences

Mentor

Google Summer of Code Summer 2017

- Helped mentoring two students participating in Google Summer of Code program towards completing their proposed projects for OpenCV organization.

UCI International Summer Undergraduate Research Summers 2016 and 2017

- Proposed research projects for undergraduate interns
- Supervised undergraduate students from Korean universities in completing proposed projects

Teaching Assistant

- Introduction to Computer Organization, UC Irvine
- Discrete Mathematics for Computer Science, UC Irvine
- Principles of Operating Systems, UC Irvine
- Data Structures, UC Irvine

Skills and Tools

- **Programming Languages**: Functional:{Haskell}, Imperative: {Python, JavaScript, C/C++, Rust, and Java}
- **Web Standards**: WebRTC, WebAssembly, SIMD.js
- **Software Development Productivity**: CMake, Git and GitHub
- **Hardware Design and Verification**: OpenCL, Verilog, SystemC and TCL scripting
- **Scientific**: SAT solvers and integer programming optimization toolkits
- **Machine Learning and Data Mining**: Caffe, Pytorch, Weka
- **Office Productivity**: LaTeX and PGF/TikZ 
- **Algorithmic Programming and Problem Solving** Participated in numerous ACM ICPC events

Selected Projects

- OpenCV.js: OpenCV in JavaScript: Targets WebAssembly and supports parallel processing using SIMD and parallel workers. It also comes with proper JavaScript bindings and extensive set of online tutorials and documentation.
  Available at https://docs.opencv.org/master/d5/d10/tutorial_js_root.html
- SIMD.js vectorizaion for gl-matrix.
  Available at https://github.com/toji/gl-matrix
- An optimizable compiler for PL241 language: includes SSA-based optimizations, linear scan register allocation, and code generation. https://github.com/sajjadt/pl241compiler
- A benchmark for WebRTC implementations.
  Available at https://github.com/ucisysarch/WebRTCBench

Academic Services

Peer-reviewer for International Journal of Parallel Programming (IJPP)

Community Services

Co-host "Static Waves" music show on KUCI radio station Fall-Winter 2016

References

Alex Nicolau
Distinguished Professor
Computer Science Department
UC Irvine
✉ nicolau@ics.uci.edu

Alex Veidenbaum
Professor
Computer Science Department
UC Irvine
✉ alexv@ics.uci.edu

Moh Haghighat
Senior Principal Engineer
Intel Corporation
✉ mohammad.r.haghighat@intel.com