Brennan Shacklett | bps@cs.stanford.edu | (360) 464 – 0356 | https://cs.stanford.edu/~bps

Education:

9/2019 – Present
Stanford University: Ph.D. in Computer Science, Ongoing
Group: Graphics

9/2018 – 6/2019
Stanford University: M.S. in Computer Science, with Departmental Distinction in Research
Track: Systems & Real World Computing

9/2014 – 6/2018
Stanford University: B.S. in Computer Science, with Honors & Distinction
Track: Systems

Research:

9/2018 – 6/2019
Advised by K. Fatahalian and A. Lefohn

Online Training for Neural Network Based Denoisers
- Masters Thesis: *Continuous Learning for Interactive Denoising of Path Traced Content*
  - `https://cs.stanford.edu/~bps/masters.pdf`
- Denoising model continuously retrains to target on-screen content
- Trains against noisy reference data with Noise2Noise based techniques

1/2017 – 12/2018
Advised by P. Hanrahan

Interactive Circuit Debugging and Simulation
- Honors Thesis: *Interactive Circuit Debugging and Simulation with Just In Time Compilation*
  - `https://purl.stanford.edu/jn757wx9067`
- Hierarchical LLVM based JIT simulator for low latency debugging: *github.com/shacklettbp/jitsim*
- Created MDB – a GDB-esque debugger for hardware: *github.com/phanrahan/magma*
- Researched visual circuit debugger to extend beyond traditional waveform viewers

1/2015 – 2/2016
Advised by K. Winstein

ExCamera Video Project
- NSDI 2017: *Encoding, Fast and Slow: Low-Latency Video Processing Using Thousands of Tiny Threads*
  - S Fouladi, R Wahby, B Shacklett, K Balasubramaniam, W Zeng, R Bhalerao, A Sivaraman, G Porter, K Winstein
- Researched encoding schemes for seamlessly transitioning streaming video between quality levels
- Researched transformation between buffered video playback and a graph traversal problem

Employment:

3/2019 – 6/2019
Stanford University: Course Assistant for CS348B: Image Synthesis Techniques
- Lectured on physically accurate simulation of camera systems
- Updated and improved assignments and led content review sessions

6/2018 – 9/2018
NVIDIA Corporation: Real-Time Rendering Research Intern
- Researched improvements to temporal stability within DLSS, a deep learning based super sampling filter
- Researched and implemented a real-time low motion optical flow network for image reconstruction

6/2017 – 9/2017
Barefoot Networks: Software Engineering Intern
- Implemented live debugging features for network switches
- Created embedded C99 interpreter for dynamic reconfiguration

6/2016 – 9/2016
Mozilla Corporation: Video Codec Research Intern
- Researched rate-distortion optimizations in AV1: improved mode search and state re-use
- Investigated variance based adaptive quantization to improve bit allocation within frames

6/2015 – 9/2015
Pebble Technology: Firmware Engineering Intern
- Redesigned and secured PebbleOS system call ABI
- Created compact STM32F2 bootloader and researched ARM code size optimizations

10/2011 – 9/2014
Generation YES: Software Developer
- Lead developer for TechYES: a project based learning system using Ruby on Rails and MySQL

Projects:

Open Source Contributions
- Linux Kernel: Fixes to fixed point truncation in Intel frequency scaling driver - `https://bit.ly/2FWpZXB`
- Glibc: Patched relative path issue in dynamic loader - `https://bit.ly/2PZXgWc`
- Gentoo Linux: Various patches for compiler incompatibilities - `https://bit.ly/2r9U77k`

Personal Projects
- Memory corruption checkers for Clang Static Analyzer
- Traditional 3D and VR video games in the Unity engine