ANDREW X ZHONG

Mountain View, CA 94043 • (217) 550-2869 • axzhong3@gmail.com • ocf.io/andrewxz

EDUCATION

University of California, Berkeley - Berkeley, CA
Master of Engineering, Computer Science - Visual Computing and Computer Graphics 05/2014

University of Illinois at Urbana-Champaign - Urbana, IL
Bachelor of Science, ECE with *Highest Honors*, Overall: 3.89/4.0, Technical: 3.92/4.0 05/2013

Zhejiang University - Hangzhou, China
Chu Kochen Honors College, Overall: 3.96/4.0 09/2008 - 06/2010

Related Coursework: Computer Vision, Deep Learning, Machine Learning, Algorithms, Computer Graphics, Parallel Computing, Operating Systems, Computer Architecture, Leadership, Entrepreneurship

SKILLS

Languages: C/C++, Python, CUDA, MATLAB, HTML, CSS, JavaScript, SQL, x86
Applications: OpenCV, TensorFlow, TFLite, Keras, Motion Capture (VICON), Google Cloud Platform, Android, OpenGL

EXPERIENCE

Stealth Mode Startup on Social Avatar - Senior Computer Vision Engineer, Redwood City, CA 02/2018 - Present
- Led computer vision research and development towards real-time mobile deployment with Tensorflow Lite
- Implemented from scratch a real-time 130 fps constrained local model based (CLM) face landmark tracker in C++/Python
- Trained a real-time 400 fps Xception-based emotion deep network with Keras for animating face blend shapes
- Developed a real-time 400 fps MTCNN-based landmark/bounding box network for face localization and pose estimation
- Performed support vector regression on network intermediate outputs for mouth/eye feature detection

Magic Leap Inc. - Lead Software Engineer, Mountain View, CA 11/2015 - 02/2018
- Led eye tracking algorithmic performance analysis
- 6DoF motion capture and verification (sub-millimeter spatial and μs-level temporal calibration)
- Automated and scaled up groundtruth data collection by 10x to 100+ houses and 2000 human subjects in 1 year
- Streamlined perception algorithm batch evaluation and visualization on the cloud with 100x speed in 2 years

Apple Inc. - Performance and Modeling Engineer, Cupertino, CA 06/2014 - 11/2015
- Performed use cases performance validation and trade-off analysis for next-generation mobile system-on-chips (SoCs)
- Implemented SoC models and interface layers to agent models/RTL and software simulation platforms in C/C++
- Initiated a trace-based system performance/traffic pattern mining and visualization tool

Qualcomm Research Silicon Valley - Augmented Reality (Prof. Björn Hartmann), Santa Clara, CA 09/2013 - 05/2014
- Designed a user interface framework that delivers an interactive indoor navigation experience through 3D augmented graphical views aligned with indoor objects
- Demonstrated our application in the CITRIS Invention Lab at Berkeley, providing augmented navigation, interactive device instructions, demo products display and device reservation lookup for lab visitors and apprentices
- Developed on the Android mobile platform powered by OpenGL graphics, orientation sensors and a position simulator

Qualcomm Inc. - Graphics System Design Intern, San Diego, CA 05/2013 - 08/2013
- Initiated and developed text processing and pattern matching tools for massive netlist and log files
- Performed MIPI DSI (Display Serial Interface) modeling and video stream simulations

Coordinated Science Laboratory - Diagnosing Performance Violations at System Level Using Data Mining (Prof. Shobha Vasudevan), Urbana, IL 10/2012 - 05/2013
- Localized the latency and throughput violations using a concurrent pattern mining approach
- Applied domain knowledge to filter out up to 92.8% of transaction traces, increasing mining efficiency
- Set up a system-level modeling platform for on-chip bus communication in SystemC and TLM

Beckman Institute - Brain-controlled Programmable Embedded System, Urbana, IL 01/2013 - 05/2013
- Designed an EEG-signal-controlled tablet prototype with ˜2.5 s response time and 95% reliability
- Earned Research Award in Senior Design Hall of Fame

Qualcomm Inc. - Algorithm and System Design Intern, San Diego, CA 06/2012 - 08/2012
- Implemented the color processing algorithm based on 3D look-up table gamut mapping for Mirasol Display
- Optimized memory placement algorithm and reduced look-up table size by a factor of 4

PUBLICATIONS

Improving User Experiences in Indoor Navigation with Augmented Reality, *Technical Report No. UCB/EECS-2014-74*
Diagnosing Root Causes of System Level Performance Violations, *ACM/IEEE ICCAD 2013*
Troubleshooting Performance Violations at System Level Using Data Mining, *Poster at DAC 2013*

HONORS

Eta Kappa Nu, Tau Beta Pi, National Society of Collegiate Scholars, IEEE, SIAM
Highest Honors at Graduation, O. Thomas and Martha S. Purl Scholarship, Dean's List
First-Class Scholarship for Outstanding Merits, 2008-2009
First Prize in National Physics Contest in Jiangsu, China, 2007

PROJECTS

360° VR Film Storytelling - Garage Stories Hackathon, Palo Alto 06/2017

- Practised VR storytelling and created a film with 360° camera in 36 hours on a team of 5
- Post-editing and stitching in progress; full film to be released on YouTube [link placeholder]

Driving Behavior Cloning on Simulator Tracks with DNN - Udacity Self Driving Car Challenge 02/2017

- Collected and generalized multiple laps of my own driving data on a Unity simulator
- Trained in Keras the NVIDIA end-to-end model architecture, which successfully drives the car around track

Advanced Lance Detection and Vehicle Tracking - Udacity Self Driving Car Challenge 12/2016

- Designed and fine-tuned a robust lane detection algorithm based on traditional CV features (color space gradients on perspective transformed undistorted images)
- Trained and robustified a Linear SVM on YCrCb HOG features with GTI and KITTI vehicle datasets

Data Visualization Framework on VR Systems - AT&T VR Mobile App Hackathon - San Francisco 06/2015

- Designed an immersive virtual reality framework for real-time data visualization on Gear VR with Unity Game Engine
- Enabled users to literally walk into big data represented by dots and curves, zoom, pinch and travel in 4 dimensions

Machine Learning - CS Berkeley 01/2014 - 05/2014

- Applied logistic regression, SVM, decision trees, random forests, neural networks, K-means, PCA and etc. on various supervised/unsupervised classification/regression problems
- Predicted day of the week with 98.84% accuracy with 15 months of daily traffic data in the bay area

Parallel Computing - CS Berkeley 01/2014 - 05/2014

- Parallelized matrix multiplication, particle simulation and Knapsack problem with OpenMP, MPI, CUDA or UPC
- Implemented a generic parallelized framework of A* search with both CUDA and OpenMP

Augmented Object Detector - Android App - CS Berkeley 09/2013 - 02/2014

- Detected objects from Android camera video stream with Haar training
- Rendered the detected objects in a 3D virtual scene on top of camera view with OpenGL ES 2

Operating Systems - CS Berkeley and ECE UIUC 01/2013 - 02/2014

- Developed a multi-threaded HTTP server that supports asynchronous IO and thread-safe caching
- Built a Linux-based OS in C and x86: paging, interrupts, system calls, program loader, page allocator, multiple terminals, scheduling, signals, sound and mouse support, shell extensions and GUI
- Achieved 4th place out of 30 teams in the Microsoft Operating System Design Competition

Computer Graphics and Computer Vision - CS Berkeley 09/2013 - 11/2013

- Coded in C++ from scratch: a ray tracer that implements Phong shading, refraction and .obj file inputs
- Developed in OpenGL: uniform subdivision, adaptive tessellation, obj & mtl inputs, vertex shading
- Explored homography rectification, 3D reconstruction, edge detection, texture and digit recognition

Pipelined Processor Design - ECE UIUC 09/2012 - 12/2012

- Designed and verified datapath, control and cache of a 5-stage pipelined processor based on LC3b
- Achieved 2nd place out of 22 teams in the AMD Processor Design Competition