Howard Nguyen

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EDUCATION

University of California, Berkeley — Expected May 2015
B.S. Electrical Engineering and Computer Science — GPA: 3.45

RELEVANT COURSEWORK

Graphics
Artificial Intelligence
Data Structures
Machine Structures
Machine Learning, *enrolled*
3D Modeling and Animation, *enrolled*
Computational Photography
Efficient Algorithms
Databases
Signals and Systems
Computer Vision, *enrolled*

TECHNICAL SKILLS

proficient with: Python, Java, Matlab, C++, HTML, CSS
familiar with: C, MIPS assembly, Arduino, Javascript, d3, SQL, PostgreSQL, Redis
tools: Autodesk Maya, Flask, OpenMP, OpenGL

WORK EXPERIENCE

Software Engineering Intern, Natero, Palo Alto, CA — May 2014 - Aug 2014
- **Cohort analysis:** wrote a JSON compiler to chain Hadoop MapReduce jobs and visualized results using retention rate and "layer-cake" plots.
- **Redis cache:** created custom LRU cache with locking and manual garbage collection to allow for parallel reads and writes.

Academic Intern, UC Berkeley EECS Dept, Berkeley, CA — Aug 2013 - Dec 2013
- Assisted in teaching CS 61A by holding office hours, answering questions on Piazza student forum, leading section warm-ups, and helping TAs lab.

Software Engineering Intern, Flowbit — May 2013 - Aug 2013
- Built an Arduino-based remote water monitor that could process SMS commands, send daily water usage, and receive GPS information.

CITRIS Lab, Software and Hardware Intern — May 2013 - May 2014
- Researched and designed prototypes for hand-powered, small-scaled electric power generators like bicycle pump dynamos and piezo-electric shoes.

PROJECTS

Augmented Reality Play, TreeHacks — Feb 2015
- Injected virtual objects into a live video stream where a user can translate, rotate, scale, and sculp it. Hand gestures read using Leap Motion and video feed augmentation implemented using ARToolKit in C.

Poisson Blending — Dec 2014
- Blended objects/textures from a source image into a target image using Poisson blending, also known as gradient domain blending.

Face Morphing — Nov 2014
- Morphed a pair of faces together by averaging their respective Delaunay triangles and applying an inverse warp transformation on each pixel value.
- Averaged faces from the DTU dataset to create the "mean Danish face"
- Changed my ethnicity by extrapolating my facial features with various "mean faces"

Content Aware Resizing through Seam Carving, Awarded Best Class Project — Oct 2014
- Resized images by removing seams of pixels that contain the lowest gradient energy.
- Automatically removed objects by masking their respective pixels with larger energies.
- Optimized resizing speed for real-time carving by precomputing and downsampled interpolation.

Colorizing Prokudin-Gorskii Photos — Sep 2014
- Created an image registration algorithm utilizing image pyramids, Canny edge detection, and L2 norms for fast and precise alignment.
- Implemented automatic contrasting and automatic white balancing to make images look clear and vivid.

Ray Tracer — Mar 2014
- Rendered photorealistic virtual scenes made of spheres and polygons with shading, shadows, reflection, refraction, antialiasing, parallel tracing, and environment mapping effects.