Neil G. Alldrin

CONTACT INFORMATION

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OBJECTIVE

To advance my career through employment in industrial/academic research in computer vision

EDUCATION

University of California, San Diego — La Jolla, CA — 09/02 – 09/08
Ph.D., Computer Science and Engineering, 09/08
C. Phil., Computer Science and Engineering, 12/06
M.S., Computer Science and Engineering, 12/05

- Dissertation: *Models and Methods for Recovering Shape, Reflectance, and Illumination From Images*
- Advisor: Prof. David Kriegman
- GPA: 3.81

University of California, Berkeley — Berkeley, CA — 08/98 – 05/02
B.S., Electrical Engineering and Computer Science, 05/02 with High Honors

- GPA: 3.79

EXPERIENCE

Google — Mountain View, CA — 03/11 – Present
Software Engineer

- Member of image search content analysis team
- Design and develop algorithms in support of the image search product
- Implement production code
- Co-inventor on multiple patents (pending)

Tandent Vision Science — Pittsburgh, PA — 11/08 – 02/11
Vision Research Scientist

- Assist in foundational and applied research
- Prototype research ideas
- Design and development of production code base
- Co-inventor on multiple patents (pending)
- Misc. responsibilities: data capture & organization, customer interaction / sales, hiring, project management

University of California, San Diego — La Jolla, CA — 06/04 – 09/08
Research Assistant

- Advisor: Prof. David Kriegman
- Research in computer vision

Delta Design — Poway, CA — 06/06 – 08/06
Intern, Computer Vision

- Manager : Ken Ding, Ph.D.
- Developed in-house computer vision library based on OpenCV

University of California, San Diego La Jolla, CA 09/03 – 03/07
Teaching Assistant

- CSE 252A - Graduate Computer Vision I (Wi. 2006, Wi. 2007)
- CSE 105 - Intro to the Theory of Computation (Wi. 2006)
- CSE 111 - Object Oriented Software Design (Fa. 2003, Sp. 2004, Sp. 2005)
- CSE 3 - Fluency in Information Technology (Wi. 2005)
- CSE 123A - Computer Networks (Wi. 2004)

University of California, Berkeley Berkeley, CA 06/01 – 05/02
Student Researcher

- Project Advisor: Prof. John Canny
- Worked on Universal Planar Manipulator Project

HONORS AND AWARDS

Micro Fellowship, UC San Diego, 2003
Graduated with High Honors from UC Berkeley, 2002
Ford Motor Company Scholar, 2001 and 2002
Member of Eta Kappa Nu and Tau Beta Pi
Valedictorian, Turlock High School, 1998

PUBLICATIONS

N. Alldrin, T. Zickler, D. Kriegman, "*Photometric Stereo With Non-Parametric and Spatially-Varying Reflectance*", CVPR 2008, June 2008.

N. Alldrin, D. Kriegman, "*Toward Reconstructing Surfaces with Arbitrary Isotropic Reflectance: A Stratified Photometric Stereo Approach*", ICCV 2007, October 2007 (**Oral Presentation**).

N. Alldrin, P. Mallick, D. Kriegman, "*Resolving the Generalized Bas-Relief Ambiguity by Entropy Minimization*", CVPR 2007, June 2007 (**Oral Presentation**).

N. Alldrin, D. Kriegman, "*A Planar Light Probe*", CVPR 2006, June 2006.

D. Reznik, J. Canny, N. Alldrin, "*Leaving on a Plane Jet*", IROS 2001, October 2001.

COURSEWORK

University of California, San Diego

- Algorithms, Appearance Modeling, Computer Architecture, Computer Vision I & II, Networks, Neural Networks, Operating Systems, Software Architecture, Theory of Complexity

University of California, Berkeley

- Algorithms, Artificial Intelligence, Compilers, Digital Hardware Design, Operating Systems, Signals and Systems

PROJECTS

University of California, San Diego

- *Photometric Stereo*: My three most recent projects involve photometric stereo. Specifically, I have focused on the use of general reflectance models that are valid for a wider range of materials than previous methods. (In CVPR 2007, ICCV 2007, and CVPR 2008).
- *Lighting Estimation*: In 2006, I researched a novel method for lighting estimation in which BRDFs were fabricated to output frequency domain coefficients of the incident light field. (In CVPR 2006).
- *BRDF Estimation*: As part of CSE 272 (Advanced Appearance Modeling), I examined the problem of recovering diffuse reflectance under natural illumination conditions. My approach utilized low-frequency approximations of the illumination and BRDF using spherical harmonics.

- *Pedestrian Detection*: As part of CSE 252C, I implemented a version of the Adaboost pedestrian detector popularized by Viola and Jones.
- *Super-Resolution*: In 2005, I wrote a summary paper on super-resolution.
- *Classification & Clustering*: As part of CSE 253 (Neural Networks), I worked on three projects – (1) a comparison of EM and k-means clustering algorithms; (2) gender classification using neural networks; and (3) classification of facial expression using radial basis function networks.
- *Failure Prediction in Hardware Systems*: In CSE 221 (Operating Systems), I helped analyze sensor data from a set of servers in order to predict failures.
- *TCP Nicer*: In CSE 222 (Networking), I helped implement and analyze an extension to TCP Nice, a sender side modification of the TCP protocol to allow flows of different priority.
- *ActiveCampus.ucsd.edu*: In 2004, I worked with Bill Griswold and others on the ActiveCampus.ucsd.edu project. This involved programming and testing using various web technologies such as PHP and SOAP.

University of California, Berkeley
- *Universal Planar Manipulator (UPM)*: I collaborated with Prof. John Canny and Dan Reznik, Ph.D. on the UPM project. My primary responsibility was the creation of new demos for the UPM, which involved non-trivial modification and extension of the source code (particularly in the control logic and camera tracking modules).
- *MIDI Synthesizer*: As part of EECS 150, I designed and implemented a MIDI synthesizer on an FPGA board using Verilog.

TECHNICAL SKILLS

Languages & Technologies:
- C, C++, Matlab, Python, OpenCV, Bash, Linux, Git, SVN, SQL, HTML, PHP, LaTeX

Computer Vision:
- Photometric Stereo, Shape-From-{Shading,Silhouettes,Motion,Structured Lighting}, BRDF Measurement, Intrinsic Imaging, Edge Detection, Texture Analysis, GraphCuts, Face Detection, Camera Calibration (Geometric and Photometric), Feature Detection (SIFT, Harris), Super-Resolution, Optical Flow, Tracking, Particle Filters, RANSAC

Machine Learning:
- Classification & Regression (SVMs, Neural Networks, Boosting), Clustering (K-Means, EM, Spectral), Optimization (Linear Least-Squares, LP, QP, SDP, Non-Linear Optimization), PCA, LDA, SVD, NNMF

Graphics:
- HDR Imaging, BRDF Modeling, Shape Modeling, Rendering

PROFESSIONAL ACTIVITIES

Reviewer:
- IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2007 – 2009
- IEEE International Conference on Computer Vision (ICCV), 2009
- European Conference on Computer Vision (ECCV), 2012
- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2009 – 2012
- SPIE Journal of Electronic Imaging (JEI), 2010
- International Journal of Computer Vision (IJCV), 2010
- Computer Vision and Image Understanding (CVIU), 2010
- IEEE Intelligent Vehicles Symposium (IV), 2010

IEEE Member, 03/05 – Present

Organizer: Pixel-cafe (weekly talks from UCSD Vision and Graphics lab), 03/07 – 06/07

Interests and Hobbies

Photography:
- My interest in photography began while capturing data for projects in graduate school. I have since purchased my own equipment (Canon SLR) and am continually learning more about this art.

Open source software:
- I have been using GNU/Linux for over ten years.

Christianity:
- I currently attend Peninsula Bible Church and was part of the UCSD graduate Christian fellowship leadership team in 2006/2007.

Sports:
- I play volleyball on a weekly basis. While at UCSD I participated in intramural sports (flag football, indoor soccer, basketball, and softball). I also enjoy tennis, ultimate frisbee, and bowling.

Music:
- I play guitar and piano recreationally.

References

Available Upon Request