Brian Taylor

CONTACT

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EDUCATION

University of California, Los Angeles (UCLA)

Ph.D. Computer Science, advisor: Stefano Soatto (GPA 3.84/4.0) — March 2016

M.S. Computer Science, advisor: Stefano Soatto (GPA 3.76/4.0) — June 2011

University of California, Berkeley (UCB)

B.S. Electrical Engineering and Computer Science (GPA 3.53/4.0) — May 2009

EXPERIENCE

Vision Lab (UCLA) Los Angeles, CA
Graduate Student Research Assistant — September 2009 – March 2016

My research involves developing algorithms for scene understanding from video data:

- Developed causal framework to automatically discover objects from occlusions in video and track their shapes as they evolve over time, producing object labels, depth layer labels, and motion estimation for each pixel in every frame (P1,P2)
- Combined appearance-based semantic classifiers and motion cues (occlusions) into a unified linear program to assign a semantic category (e.g. car, road, building) and coarse depth label to each pixel in every frame (P3,P4)
- Ported occlusion detection/optical flow approach to CUDA, yielding 4–5x speedup over C++
- Implemented real-time object recognition via branch-and-bound search for autonomous robot exploration (P5)

Facebook Menlo Park, CA
Software Engineering Intern (Ads Integrity) — June 2013 – September 2013

- Revamped text detection C++ library with robust langauge-agnostic method based on the stroke-width transform for localizing text regions, with the goal of removing perceptually unpleasant ads (for us, text area $> 20\%$), increasing successful ad removal by 5%
- Built evaluation framework to compare text detection/localization approaches and managed two contractors creating a dataset annotated with text regions for this benchmark

Software Engineering Intern (Trust and Safety) — June 2012 – September 2012

- Developed and deployed tool in PHP to automatically find and extract URL links from images of legal documents, before which the Legal Operations Team transcribed URLs manually
- Created text detection library in C++ to extract overlay text regions in ad images and pre-process them to improve OCR output, resulting in another cue in the classification pipeline for identifying and removing spammy ads

Teleimmersion Lab (UCB) Berkeley, CA
Undergraduate Research Assistant — August 2008 – September 2009

- Employed real-time 3-D reconstruction C++ toolkit to construct psychology experiments to compare subjects' speed performing symmetric vs. asymmetric hand motions in virtual space
- Gathered test subjects, administered above experiment, and aggregated resulting data
- Implemented state-of-the-art occlusion detection for comparison with in-house approach

Applications Services Berkeley, CA
Programmer — August 2007 – September 2008

- Developed web-based applications and maintained existing tools in PERL in a small team to monitor large employee and resident databases and administer an in-room connection program providing network access to over 7,000 university residents
- Created querying system to gather information from wireless access points, allowing easy aggregation and views of network status/details across campus
- Assisted preliminary re-design of unified database model for employee and resident accounts

Cisco San Jose, CA
Software Engineering Intern June 2008 – August 2008

- Added ability to specify and connect a ternary multiplexer in hardware from an if-elseif-else statement in code for a new internal HDL compiler written in Python allowing general purpose programming language syntax for specifying Cisco ASICs
- Collaborated with two interns to build a web-based memory browser/debugger for new HDL
- Reduced development timeline of upcoming Cisco ASICs by a few months via combined efforts of two interns and myself on the compiler and debugger, acknowleged by Cisco Team Achievement Award ($500 bonus)

Berkeley Institute of Design (UCB) Berkeley, CA
Undergraduate Research Assistant October 2007 – June 2008

- Developed chat bot helping users focus their questions and concerns on resolving problems with language following the Nonviolent Communication framework, with the goal of facilitating communication/cooperation in inter-disciplinary research teams

Teaching

Teaching Assistant (UCLA). Machine Perception (CS 268) Fall 2015
Graduate computer vision

Teaching Assistant (UCLA). Intro to Computer Science (CS 31) Fall 2014, Spring 2015
Undergraduate programming in C++

Teaching Assistant (UCLA). Intro to Computer Graphics (CS 174) Spring 2011
Undergraduate computer vision

Teaching Assistant (UCLA). Intro to Computer Science (CS 32) Winter 2011
Undergraduate data structures and algorithmss

Teaching Assistant (UCLA). Fundamentals of Artificial Intelligence (CS 161) Fall 2010
Undergraduate knowledge representation and algorithms for AI

Teaching Assistant (UCB). Electronic Techniques for Engineering (EE 100) Summer 2007
Undergraduate circuits (built and tested new lab projects for fall course)

Publications

P1. A. Wong, **B. Taylor**, and A. Yuille. *Learning a Geometric Model for Semantic Shape Decompositions*. Submitted to NIPS 2016

P2. **B. Taylor**, V. Karasev, and S. Soatto. *Causal Video Object Segmentation through Persistence of Occlusions*. In CVPR 2015 (oral)
http://vision.ucla.edu/cvos/

P3. **B. Taylor**, A. Ayvaci, A. Ravichandran, and S. Soatto. *Semantic Segmentation Exploiting Occlusion Relations Within a Convex Optimization Framework*. In EMMCVPR 2013

P4. **B. Taylor**, A. Ayvaci, A. Ravichandran, and S. Soatto. *Moving Object Detection and Pixel-Level Localization From Semantic Priors and Topological Constraints*. Technical Report, UCLA, March 2012

P5. J. Meltzer, A. Pretto, **B. Taylor**, and S. Soatto. *Closing the Recognition Loop: Recognizing and Searching for Objects in the Real World*. In RSS 2010 (workshop)

Technical

Linux, C/C++, Matlab, Python, GPGPU Programming (CUDA), Lisp, Java, PHP

Awards

Xerox Technical Minority Scholarship, 2005, 2006, 2010, 2011

UCLA Computer Science Department Fellowship, 2009-2011

Society of American Military Engineers College Scholarship, 2006, 2007, 2008

Cisco Team Achievement Award, 2008

Nancy Goodhue Lynch Scholarship, 2007