Levi Cai

Permanent: 4080 Pinon Dr, Boulder CO, 80303
Email: levi@levicai.com
Phone: 303-888-4305
Web: www.levicai.com

Education

Massachusetts Institute of Technology   *May 2016 to May 2018*
   Candidate for Master in Media Arts and Sciences, expected May 2018, GPA: 5.0/5.0

University of Pennsylvania   *Sept. 2008 to Dec. 2015*
   Master of Science in Engineering in Robotics, Dec. 2015, GPA: 3.93/4.0
   Bachelor of Science in Engineering in Computer Science, Minor in Mathematics, 2012, GPA: 3.35/4.0
   Bachelor's Thesis, advised by Prof Lyle Ungar: "Sentiment Analysis of Citations for Research Papers"

Academic

MIT Media Lab, Mediated Matter Group   *May 2016 to 2018*
Advised by Prof. Neri Oxman, Graduate Research Assistant
- Designed controls, simulation, and software architecture for large-scale, mobile, macro-micro arm configured, robotic platform used for large-scale fabrication, resulted in journal publication and real-world demonstration of system by printing 13.5m diameter, 3.7m high half-dome. Supported by X (formerly Google [x]).
- Developed electronics and software for swarm-based robots that fabricate fiberglass structures, experimentally verified by creating 20 robots, each autonomously built structures that were 4-meters tall.

Univ. of Pennsylvania, GRASP Lab   *Summer to Fall 2015*
Advised by Prof. Daniel Lee, Graduate Research Assistant
- Investigated heuristics for both multi-robot path planning algorithms (M*) and any-angle planning algorithms via heuristic overestimates applied to the Fast Marching Method.
- M* implementation acknowledgement in S. Tang and V. Kumar, *"A Complete Algorithm for Generating Safe Trajectories for Multi-Robot Teams"*. ISRR 2015.

Univ. of Pennsylvania, Modlab   *Summer 2009 to 2012*
Advised by Prof. Mark Yim, Undergraduate Researcher
- Developed software for user control of modular robots (CKBots) based on Robotics Bus Protocol.

Univ. of Pennsylvania, GRASP Lab   *Summer 2010*
Advised by Prof. Daniel Lee, Undergraduate Researcher
- Developed simple neural spike train and mutual information-based acoustic recognition algorithm.
- Presentation at the SUNFEST & Rachleff Scholars Symposium 2010.
- Funded by Rachleff Scholars Program.

Univ. of Colorado, Boulder: Intel. in Action Lab   *Summer 2007/2008*
Advised by Prof. Gregory Grudic, Research Assistant
- Optimized MATLAB code for the DARPA LAGR project (Learning Applied to Ground Robots).
- Individually built a mobile robot platform for use in future lab research.
- Funded by NSF Undergraduate Research Grant.

Publications and Posters

Journals
- Steven J. Keating, Julian C. Leland, Levi Cai, and Neri Oxman. "Toward site-specific and self-sufficient robotic fabrication on architectural scales." Science Robotics, Apr. 2017.

Posters
- Steven J. Keating, Julian L. Bell, Levi Cai, Barrak Darweesh, and Neri Oxman. "Digital Construction Platform." Northeast Robotics Colloquium 2017.

Teaching

Univ. of Pennsylvania, Computer Science Dept.
Supervised by Prof. Lyle Ungar, Teaching Assistant
- CIS520, Intro. to Machine Learning, grad-level, created assignments and held office hours, Fall 2015
- CIS521, Intro. to AI, grad-level, created assignments and projects, Fall 2012

Professional

MasterStreet (startup)   *2013 to 2014*
Software Engineer
- Built search engine for professional development classes using Ruby on Rails, ElasticSearch, and AWS

IBM   *2012 to 2013*
Software Engineer
- Developed server management mobile app using Dojo/Cordova for iOS/BB/Android platforms

Service and Outreach

Robotics: Science and Systems (RSS) 2017 Volunteer
MIT RoboCon Organizer – Helped organize an MIT/Boston-area robotics conference (http://robocon.mit.edu/)
IBM Extreme Blue Technical Mentor – Mentored team of engineering undergraduates and an MBA student
FIRST Robotics Mentor – NCSSM Team 900
UPenn Summer Mentorship Program – Full-time instructor for 6-week, high-school summer technology course
FIRST Lego League Coach – FACTS Middle School, afterschool coach

Awards and Honors

UPenn Rachleff Scholar – Selective undergraduate research program
IBM T. J. Watson Scholarship
UPenn Dean's List

Leadership and Extracurricular

UPenn RoboCup SPL Vision   *2009 to 2012*
Vision System Team Lead
- Developed basic vision algorithms (line and horizon detection), and led small group of undergraduates, to improve on vision system for humanoid robot soccer competition (using the Nao platform). Team placed as quarter-finalist/24 teams in 2010 RoboCup SPL competition.

UPenn FSAE Race Car   *2010 to 2012*
Electrical System Team Lead
- Designed and constructed the electrical system for a competitive Formula-style race car, 1 of 4 core members, team placed 18th/108 at the 2011 Formula SAE competition.

Additional Skills

Programming Languages	C/C++, ROS, CUDA, Java, MATLAB/MEX, Python, Ruby, Full Web Stack
Software	Eagle PCB CAD, SolidWorks, Adobe Illustrator