Kang (Frank) Chen

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Undergraduate Student
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Interest

I am primarily interested in product management, cybersecurity, computer vision, and robot learning. I have conducted research in computer vision, robot planning, and ML at JPL & UCLA.

Education

University of California, Los Angeles — Fall 2013 - Spring 2017

B.S. Computer Science
GPA: 3.4/4.0

Relevant Skills & Courses

Programming Languages: C/C++, MATLAB, Python, Javascript, OCaml, Flask, Octave, OpenCV

Courses: Intro to Machine Learning, Intro to AI, Mathematical Modeling, Scalable Internet Service, Computer Security, Computer Networks, Linear Algebra, Intro to Probability, Formal Languages & Automata, Databases, Algorithms, Data Structures

Academic Experience

Center for Vision, Cognition, Learning & Autonomy — March 2016 - present

Undergraduate Researcher

* Research in causal relationships, fluent extraction, and causal learning
* Implemented detection + tracking modules in OpenCV for teaching robots to fold shirts
* Built fluent visualization modules to learn a generative grammar model from raw robot data
* Submitted paper to the International Joint Conference on Artificial Intelligence (IJCAI)
* Submitted paper to Neural Information Processing Systems (NIPS) conference

Jet Propulsion Laboratory — June 2015 - June 2016

Computer Vision Research Intern

* Spearheaded frame by frame tracking of IR multi-bandwidth images
* Achieved 90% accuracy in segmentation of images using neural network
* Published paper on correlation optimization at SPIE 2016 conference in Baltimore, MA.
* Paper on neural network segmentation is in proceedings of the SPIE 2017 conference.

Work Experience

Microsoft — July 2017 - present

Program Manager

* Drive automatic incident routing project in Enterprise Infrastructure Services
* Co-Lead for MACH Technology & Services

Workday — June - September 2016

Application Development Intern

* Implemented tax location mapping reports as part of Workday 28 product release
* Created get/put APIs for Workday Web Services
* Actively involved in Workday's agile development pipeline

Taboola
March - June 2016

Software Engineering Intern
* Implemented user authentication system using React.js and Node.js
* Built modules to communicate with Taboola Backstage API from scratch

Daily Bruin
September 2014 - March 2016

Project Manager
* Spearheaded complete redesign of Spectrum, Daily Bruin's online Photo Blog
* Led a team to build an interactive web application for UCLA's dorm communities
* Presented workshops on Sublime Text + Git tools for incoming Daily Bruin staff

Teaching Experience

CS 88S: Undergraduate Student Initiated Education (USIE)
September 2016 - present

Seminar Instructor | Website: http://kfrankc.me/cs88s
* Designed a 10-week undergraduate computer science seminar to introduce students to cybersecurity fundamentals & protecting themselves in cyberspace
* Reached an international audience, with more than 1400 people subscribed to my weekly email updates on topics and relevant articles covered in the course
* Topics included general introductions to: computer networking, cryptography, password cracking, wireless vulnerabilities, denial of service attacks

The Coding School
September 2015 - January 2016

Student Instructor
* Organized computer science classes for middle school children on HTML/CSS/Javascript
* Spearheaded a lesson on Github & using that to host a personal website

Software & Notable Projects

Los Angeles Urban Crime Patterns - Data science project analyzing trends in LA crime patterns

Used crime data in the past 10 years from Los Angeles Sheriff website to analyze trends of crime patterns in location, type, frequency, and day/month/year. Final project for CS 170A: Mathematical Modeling.
`http://kfrankc.me/files/CS170A_project.pdf`

NATCAR - Autonomous RC line-following car

Design, build, and race autonomous RC car on tracks marked by a 1''-wide white tape
Implemented computer vision, motor control, 3D-printing, & circuit design to build the RC car
1st place @ UC Davis NATCAR Competition 2015
`https://www.youtube.com/watch?v=Zx1SNIKpR9Y`

FluentVisualizer - Visualizing high-dimensional robot action data in a 3D space

Designed a web UI to visualize fluent changes in a robot's arm movement using t-Distributed Stochastic Neighborhood Embedding, decomposing 7-dimensional data into 3 dimensions.
Scheduled to be open-sourced in January 2017 after VCLA demo

Publications & Presentations

Cross-correlation and image alignment for multi-band IR sensors

Kang (Frank) Chen, Andrew Luong, Mallory Dewees, Xinyi Yan, Thomas Lu, Tien-Hsin Chao, Edward Chow, Gilbert Torres
SPIE Optical Pattern Recognition XXVII 2016 | Baltimore, MD

Intelligent multi-spectral IR image segmentation

Kang (Frank) Chen, Andrew Luong, Stephen Heim, Maharshi Patel, Thomas Lu, Tien-Hsin Chao, Edward Chow, Gilbert Torres
SPIE Optical Pattern Recognition XXIX 2017 | Anaheim, CA

Unsupervised learning of fluents from human demonstrations

Nishant Shukla, Yunzhong He, **Kang (Frank) Chen**, Song-chun Zhu
Submitted to Neural Information Processing Systems (NIPS) 2016

Learning Human Utility from Video Demonstrations for Deductive Planning in Robotics

Nishant Shukla, Yunzhong He, **Kang (Frank) Chen**, Song-chun Zhu
Submitted to International Joint Conference on Artificial Intelligence (IJCAI) 2017

Visualizing Human Utility from Video Demonstrations for Deductive Planning in Robotics

Kang (Frank) Chen, Nishant Shukla, Song-chun Zhu
UCLA Undergraduate Research Poster Day. Research Poster.

Intelligent Image Processing and Feature Extraction from Multiple IR Video Images

Kang (Frank) Chen, Andrew Luong, Mallory Dewees, Xinyi Yan
JPL Summer Research Symposium, August 2015. Pasadena, CA. Section Presentation.

Intelligent IR Image Correlation and Segmentation

Kang (Frank) Chen, Andrew Luong, Kevin De Jesus, Maharshi Patel
JPL Winter Research Symposium, December 2015. Pasadena, CA. Section Presentation.

Honors and Awards

Upsilon Pi Epsilon Honor Society	March 2014 - present
Eta Kappa Nu Honor Society	March 2015 - present
Henry M. Showman Prize in Undergraduate Research	May 2017
Engineering Achievement for Student Welfare	May 2017
2017 Engineering Commencement Student Speaker	May 2017
Eric & Peggy Johnson Scholarship in Engineering	January 2017
True Bruin Distinguished Senior Finalist	November 2016
Gerald P. Popek Scholarship in Computer Science	January 2016
Harley L. Woods Family Scholarship	January 2015

Leadership

Resident Assistant — September 2015 - present

* Responsible for a floor of 90 residents in UCLA's residential dorms

IDEA Hacks Organizer — September 2015 - February 2016

* Sponsorship organizer for the largest hardware-focused hackathon in the West Coast

LA Hacks Organizer — January 2015 - present

* Mentorship + Operations organizer for the largest hackathon in the West Coast

Engineering Society of UCLA
September 2014 - June 2015

* External VP for the umbrella engineering club at UCLA

Bruin Entrepreneurs
September 2013 - June 2015

* Led incubator program for UCLA's student entrepreneurs