

# KEVIN KAO

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## EDUCATION

### University of California, Berkeley – College of Engineering

B.S. Electrical Engineering & Computer Science (EECS)

May 2016  
3.54 – CS GPA

#### Awards: Regents & Chancellor Scholar

- Received by only top 2% of the university's students

#### Advanced Courses:

- Completed: Data Structures, Machine Architecture, Efficient Algorithms, Database Systems, Computer Security, Artificial Intelligence
- Current: Algorithms in Computational Biology, Web Architecture, Data Science, Communication Networks

## SKILLS

**Programming Languages:** Java, Python, C, C++, HTML, CSS, JavaScript, SQL, Ruby, Bash

**Frameworks & Libraries:** Node.js, Sails.js, Twitter Bootstrap, Hadoop MapReduce, D3, Rails, OpenMP

**Platforms & Tools:** Github, Amazon EC2/S3/CloudFormation, UNIX, Windows, Git, GDB/JUnit, OpenSSL

## WORK EXPERIENCE

### AutoGrid Systems – Redwood City, CA

May 2014 – August 2014

#### Software Engineering Intern

### UC Berkeley School of Information – Berkeley, CA

March 2014 - Present

#### Full Stack Web Developer

- Developed secure Node.js web app called moocRP from scratch for Berkeley researchers to conduct data analytics and research (see Projects)
- Wrote Python scripts to generate large edX datasets, as well as an open-source data scraping script to contribute to Stanford's edX scripts
- Researching and contributing to machine learning algorithms written in C++ with Matlab wrapper, possibly porting to Julia for parallelization
- Working in tandem with multiple groups (MOOCLab, D-Lab, UC Berkeley CAS and CalNet team, CS professors, and education researchers)

### UC Berkeley MOOCLab – Berkeley, CA

October 2012 - Present

#### BerkeleyX Research Assistant

- Integrated LTI services to edX online learning platform, successfully importing Piazza to edX through XML tweaks
- Maintained Github repository for Berkeley course on Ruby, SaaS, and software engineering principles
- Developed Amazon CloudFormation template for automating VM setup with appropriate dependencies set up, such as Ruby on Rails

### Microsoft – Redmond, WA

December 2012

#### Software Development Engineer for Test (SDET) Extern

- Identified simple bugs from snippets of code through unit testing and integration testing
- Researched TDD with two externs to learn to push efficient code quickly in an agile software development cycle

**Other:** Co-founder of non-profit Paw for Paw, CS169 Undergraduate Assistant (Software Engineering as a Service)

## PROJECTS

### moocRP (HTML, CSS, JavaScript, Node.js, Sails.js, Bootstrap, jQuery)

February 2014 - Present

- Followed MVC design pattern and used Node.js, Sails.js platforms and Bootstrap to develop both front and backend infrastructure
- Consulted Berkeley researchers on user stories, creating a RESTful API to provide automated JSON data retrieval from web app
- Developing data analytics and visualization modules using D3.js library while maintaining security of sensitive datasets

### Node.js CAS Module (HTML, JavaScript, Node.js)

March 2014 - Present

- Pioneered first open-source JavaScript CAS module specific to UC Berkeley's authentication system, packaging for Node.js package manager
- Researched numerous CAS clients in Java, Perl, PHP, and Ruby in order to determine module necessities

### Web/VM Security Penetration Testing (Python, C, Ruby, Bash)

March 2014 – April 2014

- Performed reconnaissance on Ubuntu VM using nmap and netcat network tools to find security holes
- Penetrated into five user accounts on Ubuntu VM remotely via vulnerable FTP service with GDB stack analysis
- Wrote Python and Bash scripts to pipe hex data and perform buffer overflows, bypassing ASLR defenses for root shell access
- Scanned vulnerable C code, writing a Python script to bruteforce RSA private key and a Ruby script to spoof DNS responses to bypass SSL

### Image Filter, Metadata Extractor (C)

November 2013 – February 2014

- Implemented secure image filter algorithm by means of convolution of a kernel matrix and a .BMP image
- Exploited potential of OpenMP multi-threading library in C and Intel SSE instructions for performance speed-ups of over 600%

### MapReduce on Amazon EC2 (Java, Hadoop, Amazon EC2)

September 2013

- Utilized the Hadoop framework to process large documents and calculate word relationships on Amazon's EC2 clusters
- Implemented efficient MapReduce algorithm, benchmarking a speed of 51 seconds, half the required time of two minutes (200% speedup)

**Other:** SimpleDB RDBMS, Pacman AI, portfolio website, various language interpreters (MIPS, Scheme), Network game