

CHENYANG YUAN

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EDUCATION

Major in Computer Science, Minor in Physics
The University of Berkeley at California, Berkeley, CA

Expected Graduation: May 2016
GPA: 3.94

RESEARCH PROJECTS

Synthesis of a Layout Engine, *Advisor: Ras Bodik* *Spring 2014 – Fall 2014*

Helped build a compiler which synthesizes a layout engine in Rust from a CSS specification, which replaces the hand-written layout engine in the experimental browser Servo.

Attacks on Mobility as a Service Networks, *Advisor: Alex Bayen* *Summer 2015 – Fall 2015*

Used queueing theory to develop a model for investigating attacks on mobility as a service systems, formulated and solved for optimal attacks, and ran experiments using a dataset of 1B NYC taxi trips.

Locality-Sensitive Hashing for Matching Paths, *Advisors: Alexei Pozdnoukhov, Alex Bayen* *Spring 2015 – Present*

Construct and analyze locality-sensitive hashing schemes to match two paths in Euclidean space. This has applications for transportation researchers, who want to group together GPS traces of people taking the same route.

Quantifying Impact of Routing Services, *Advisors: Alexei Pozdnoukhov, Alex Bayen* *Fall 2015 – Present*

Studied the effects of real-time routing services on traffic networks with a routing game framework.

PUBLICATIONS

C. Yuan, J. Thai, A. Bayen, “ZUbers against ZLyfts Apocalypse: An Analysis Framework for DoS Attacks on Mobility-as-a-Service Systems”, **Accepted**, *2016 ACM/IEEE International Conference on Cyber-Physical Systems (ICCPS)*, http://www.chenyang.co/ICCPS16_submission.pdf

J. Thai, **C. Yuan**, A. Bayen, “Resiliency of Mobility-as-a-Service Systems to Denial-of-Service Attacks”, *Submitted Dec 2015, IEEE Transactions on Control of Network Systems*, http://www.chenyang.co/IEEE_TNCS_submission.pdf

SELECTED HONORS AND AWARDS

EECS Honors, Joined Berkeley’s EECS Honors program *2014*

First Place, Cal vs Stanford Big Hack *2013*

Honorable Mention, 12th Asian Physics Olympiad *2011*

One of the 8 students selected to represent Singapore in this competition.

Silver Medal, Singapore Physics Olympiad *2010*

Top 20 students in Singapore in physics.

TEACHING EXPERIENCE

Structure and Interpretation of Computer Programs, *John Denero, Paul Hilfinger* *Fall 2013, Spring 2014, Fall 2014*

Besides teaching discussion sections, labs and holding office hours, I participated in building infrastructure for the class such as autograder and website development, as well as content development such as creating labs, homeworks and project questions.

Discrete Math and Probability, *Umesh Vazirani* *Spring 2015*

I taught discussions and was on the content team responsible for creating homeworks, discussion worksheets and solutions.

Designing Information Devices and Systems, *Anant Sahai, Ali Niknejad* *Fall 2015*

I taught a discussion section and participated heavily in content development, creating homework and discussion questions. I also helped to write numerous lecture notes from scratch.

SELECTED COURSEWORK

EECS: Graduate Information Theory, Graduate Cryptography, Graduate Algorithms and Theory, Compilers, Security, AI, Randomized Algorithms

Math: Complex Analysis, Honors Abstract Algebra (introduction to category theory)

Physics: Analytical Mechanics, Quantum Mechanics, General Relativity, Electronics Lab

PROGRAMMING PROJECTS

Linear Algebra DSL

<https://github.com/yuanchenyang/llvm-linear-algebra-dsl>

An open-ended project for a compilers class. First created a set of tools for building domain specific languages (DSLs) using LLVM for code generation and created a DSL for linear algebra operations with domain-specific optimizations. Then implemented an edge detector and an optical flow estimation algorithm using the DSL.

Self-Balancing Robot

<http://youtu.be/Ps0Ex3ADR6k>

An open-ended project for my physics electronics lab class, built a self-balancing robot from scratch. Programmed a controller for it on an Arduino board.

PROGRAMMING SKILLS

Proficient in Python, Javascript, \LaTeX , Emacs, Git

Experience in Haskell, Rust, Scheme, Java, C, jQuery, d3, HTML, Hadoop, Android, SQL, Assembly