

# Aishwarya Sivaraman

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## Education

- 2017-current **PhD (Magna Cum Laude)**, *University Of California*, Los Angeles, CGPA: 3.88/4.0.
- 2010–2014 **B.Eng (Hons) Computer Engineering**, *National University of Singapore*, CGPA: 4.16/5.0.

## Research Experience

- 2017–2018 **Active Inductive Logic Programming for Search (ALICE)**, *Prof Miryung Kim and Prof Guy Van den Broeck*, UCLA.
- We designed a logic-based query language to model the structure and semantics of code. Proposed a new active learning-based inductive logic programming technique that infers a query based on positive and negative examples. This work is **accepted to ICSE 2019 (Acceptance rate 20.6%)**.
- 2017–2018 **Invariant and Probabilistic Verification-based Bit-Width Reduction for C-Programs**, *Prof Miryung Kim and Prof Jason Cong and Intel*, UCLA.
- I developed a dynamic analysis technique based on Daikon that detects bit-width invariants for integers in C programs. Our range analysis based on Daikon determines min/max ranges, to reduce the bitwidth of variables in FPGA.
  - For floating point variables, I proposed a sampling approach that provides Hoeffdings inequality-based probabilistic guarantees by comparing the error of a low precision program relative to a higher precision program.
- 2016–2017 **Research Assistant**, *Prof Khoo Siau Cheng*, National University of Singapore. Programming Languages and Software Engineering Lab.
- I architected and developed a generate-and-rank recommendation system for Extract Method refactorings. The system learns a probabilistic model from open source repositories to capture the intent of refactoring operations conducted by developers. Using this model, the tool then identifies refactoring locations in a local repository. This work was **published at ISSRE 2017**.
  - I led the development of a tool for scalable detection of refactoring. I designed a domain-specific language for a user to provide refactoring specifications and built a compiler to convert the specifications to constraints that can be plugged into a vector-based code pattern detector to detect custom refactoring.
- 2013–2014 **Research Dissertation**, *Prof Liang Zhenkai*, National University of Singapore. System and Networking Research Lab. Undergraduate Thesis
- I developed a dynamic analysis technique that analyzed HTML5-based apps to report malicious behaviors and vulnerabilities. The tool detected XSS vulnerability in the PhoneGap based Tripcase and HealthTap Android apps.

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## Professional Experience

- 2014–2015 **Technology Analyst**, *JP Morgan Chase*, Singapore.  
I worked in Securities Core Processing Platform where I developed a settlements processing engine.

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## Awards

- 2014 **Dean's List - Top 5% of cohort**, *National University of Singapore, Faculty of Engineering*.
- 2014 **First Place**, *For an outstanding, low-latency high frequency trading algorithm at JP Morgan Technology Bootcamp*.
- 2010–2014 **Full Scholarship for Undergraduate**, *National University of Singapore, Singapore Airlines–Neptune Orient Lines*.
- 2010 **Scored top 1% nation-wide**, *All India Senior School Examinations, Computer Science and Chemistry*.

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## Teaching and Mentoring Experience

- July 2018 **Instructor**, *Los Angeles Computing Circle (LACC)*, In order to inculcate a passion for programming amongst school children, I conducted introductory classes on Computer Science and Python., LACC is an outreach program organized, supervised, and mentored by faculty members and graduate student volunteers from UCLA's CS & ECE Departments..
- 2016–2017 **Student supervisions**, *Mentored undergraduate dissertation, Continuous Representation of Abstract Syntax Tree Symbols, National University of Singapore*.
- Fall 2013 **Teaching Assistant**, *Computer Architecture (CG3207), Prof Rajesh C Panicker, National University of Singapore*.

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## Service/Volunteering Experience

- Nov 2018 **Panelist**, *Grad School/Research Mentorship Event, Society of Women Engineers, Los Angeles, CA*.
- Jan 2018 **Student Volunteer**, *ACM SIGPLAN, Principles of Programming Languages (POPL) 2018, Los Angeles, CA*.
- 2017–current **Technical Director**, *Graduate student committee of the Society of Women Engineers (SWE), UCLA section*, I helped organize an outreach event with 9 dots (a non-profit organization). As part of the event, I helped introduce the students to the foundations of robotics and the usage of lava lamps.
- 2017–current **Treasurer**, *Graduate Student Association, Computer Science, UCLA*.
- 2013–2014 **Code contributor to Mozilla**, Driven to improve the quality of products I use regularly, I contributed bug fixes and patches to Mozilla Firefox and Thunderbird.

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## Publications

- [1] Aishwarya Sivaraman, Tianyi Zhang, Guy Van den Broeck, and Miryung Kim. Active inductive logic programming for code search. Accepted to ICSE, 2019.

- [2] Sihan Xu, Aishwarya Sivaraman, Siau-Cheng Khoo, and Jing Xu. Gems: An extract method refactoring recommender. In *Software Reliability Engineering (ISSRE), 2017 IEEE 28th International Symposium on*, pages 24–34. IEEE, 2017.