Chirag Bharadwaj

Personal Information

Birthdate: 23 November 1996 **Email:** chiragb@cs.princeton.edu
Citizenship: United States **Phone:** +1 609-937-6050

Languages

English (native), Spanish (conversational), Kannada (conversational)

Research Interests

computer architecture, microarchitecture models, ISA design, approximate computing, verification

Education

Princeton University, Princeton, NJ

MSE, Computer Science — expected 06/2019
- GPA: 3.30/4.00
- Advisor: Margaret R. Martonosi

Cornell University, Ithaca, NY

BSc, Computer Science — 05/2017
- GPA: 3.41/4.00
- Minor: Electrical and Computer Engineering

Research Experience

Graduate Research Assistant, Princeton University

Design of Heterogeneous Multiprocessor Systems — 01/2017–

Principal Investigator: Margaret R. Martonosi

To be determined...

Undergraduate Research Assistant, Cornell University

LambdaLab: Interactive λ-calculus for Learning — 01/2017–05/2017

Principal Investigator: Adrian L. Sampson

Laid out a theoretical foundation for an interactive visual tool that students could utilize to aid in learning the lambda calculus. Considered pedagogical value for multiple-intelligence learners.

Behaviorally-equivalent Intermediate Representation Generation — 08/2016–12/2016

Principal Investigator: Adrian L. Sampson

Generated LLVM IRs equivalent in behavior to complex NVIDIA CUDA programs for GPUs. These IRs were to be used to create a microarchitecture that achieves better CPU/GPU separation.

Teaching Experience

Graduate Teaching Assistant, Princeton University — 09/2017–
- ELE 206: Digital Logic Design
- ELE 375: Computer Architecture and Organization

Undergraduate Teaching Assistant, Cornell University — 01/2015–05/2017
- CS 3410: Digital Logic and Computer Organization (head TA)
- CS 3110: Functional Programming and Data Structures (head TA)
- CS 2800: Discrete Structures

Skills

Programming and Scripting
- Java, Kotlin, C, C++, OCaml, Coq, Python, Ruby, `bash`, `awk`, `sed`

Hardware and Software Verification
- Coq, Agda, NuPRL, SystemVerilog

Web Development
- HTML5, CSS/SASS, JavaScript, Dropwizard, JDBC, SQL, Guice, Jekyll, Ruhoh, Nanoc

Hardware, Assembly, and ISAs
- CUDA, LLVM, ARM, MIPS, RISC-V, LC-3, Verilog, GTKWave, Quartus, SPICE

Tools and Libraries
- LaTeX, Markdown, Makefile, Maven, Gradle, Eclipse, IntelliJ, `vim`, `git`, `svn`, `gdb`, `valgrind`, `gprof`, `lex`/`yacc`, `flex`/`bison`

Scholarships and Awards

Princeton University

- Teaching assistantship for engineering graduate study — 09/2017–06/2019

Cornell University

- Outstanding teaching assistant in Computer Science — 05/2017, 05/2016
- PokéSnowdown: Best final project in CS 3110 — 12/2015
- Dean's List in the College of Engineering — 05/2015, 12/2014

Earlier Honors

- Outstanding achievement in chemistry (2/747) — 06/2014
- NJ VEX robotics semifinalist team: 750-R — 02/2014
- National Merit Finalist (1 of 15000) — 01/2014
- National AP Scholar (score of 4 or 5 on eight AP exams) — 05/2013
- Morton Gould Young Composer Award, honorable mention for ages 12-18 — 04/2012

Publications

Theses

- **C Bharadwaj**. *LambdaLab: Interactive λ-calculus for Learning.* Cornell University, May 2017.

Unpublished Works

- **C Bharadwaj**, SD Goré. *Reddit Comments via Generative Grammar Modelling*, May 2017.
- SK Somayyajula, **C Bharadwaj**. *Refined Logic: Implementing Constructive Logics*, Dec. 2016.

Talks

Cornell University

- *Handy Techniques in Mathematics*, Splash! mathematics seminar, Apr. 2017.
- *Musical Groups: Exploring Music with Math*, Splash! music seminar, Nov. 2016.
- *Special Topics: Legendre Polynomials in Mathematics*, Splash! mathematics seminar, Apr. 2016.
- *A Survey of Japanese Linguistics*, Splash! linguistics seminar, Oct. 2015.
- *A Treatise on Complex Analysis*, Splash! mathematics seminar, Apr. 2015.

Projects

Software and Implementations

- `redditcommentor`: Using generative grammars to model Reddit comments — 05/2017
- `refined-logic`: Implementing refinement logics in OCaml — 12/2016
- `PokéSnowdown`: A winter-themed single-player spin-off of Pokémon Showdown — 12/2015

Notes and Sketches

- Modern Linguistics: A comprehensive treatment of theoretical/applied linguistics — in progress
- Cornell Course Notes: A digitization project of notes taken from Cornell courses — on hiatus
- Calculus Done Right: A self-teaching approach to learning AP Calculus — 01/2011

Service and Outreach

Princeton University

- Political Engagement Initiative for Asian-American students — 10/2017–
- Computer Science dept. representative in Graduate Engineering Council — 09/2017–

Cornell University

- Co-mentor for URMs and women in Computer Science — 01/2017–05/2017
- Mentor for underclassmen in Computer Science — 08/2016–12/2016
- Freshman orientation leader (group leader) — 08/2016
- Engineering freshman peer advisor (lead advisor) — 08/2015–05/2017
- Volunteer piano instructor for adult beginners — 08/2015–05/2017
- NY Science Olympiad invitational organizer and event moderator — 09/2014–02/2017

Earlier Volunteering Efforts

- Volunteer AP calculus teaching assistant in Monmouth Junction, NJ — 09/2010–05/2014
- High school badminton tournament co-organizer — 04/2012–04/2014

Selected Coursework

Princeton University

- COS 320: Compiling Techniques*
- COS 521: Advanced Algorithms
- COS 533: Advanced Cryptography
- ELE 475: Advanced Computer Architecture*

* = *currently enrolled*

Cornell University

- CS 2043: UNIX and Scripting Tools
- CS 2112: Honors Data Structures and OOP
- CS 2800: Discrete Structures
- CS 3110: Functional Programming
- CS 3410: Computer Organization
- CS 4410: Operating Systems
- CS 4700: Artificial Intelligence
- CS 4750: Mathematical Robotics
- CS 4780: Machine Learning
- CS 4810: Theory of Computation
- CS 4820: Analysis of Algorithms
- CS 4860: Applied Logic
- CS 6110: Advanced Programming Languages
- CS 6810: Advanced Theory of Computation
- ECE 2100: Electrical Circuits
- ECE 2300: Digital Logic Design
- ECE 3140: Embedded Systems
- ECE 3150: Microlectronics
- ECE 4130: Nuclear Science and Engineering
- LING 1101: Introduction to Linguistics