Chirag Bharadwaj

Personal Information

Birthdate: 23 November 1996
Citizenship: United States
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Languages

English, Kannada, Spanish, Japanese

Research Interests

programming language semantics, algebraic theory, computational complexity, verification, computer architecture, microarchitecture models and design, approximate computing

Education

Princeton University, Princeton, NJ

MSE, Computer Science — expected 06/2019
- GPA: 3.30/4.00
- Advisor: TBD

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

Augmenting NetKAT with Priorities — 09/2017–

Principal Investigator: David P. Walker

Working on extending NetKAT, a network programming language, with partially-ordered priorities.

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

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

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 at Princeton Public Library 09/2010–05/2014
- High school badminton tournament organizer 04/2012–04/2014

Selected Coursework

Princeton University

- COS 320: Compiler Techniques
- COS 401: Machine Translation
- COS 521: Advanced Algorithms
- COS 533: Advanced Cryptography
- ELE 475: Advanced Computer Architecture

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