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Robyn Burger

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EDUCATION

Cornell University - GPA: 3.67

Aug. 2022 - May 2025 (expected)

B.A. Mathematics, B.A. Computer Science

- Relevant courses: Lattices (grad.), Networks (grad.), Algorithmic Game Theory (grad.), OOP and Data Structures, Functional Programming, Algorithms, Discrete Math, Computer Systems, Cryptography, Linear Algebra, Multivariable Calculus, Nonlinear Dynamic Systems, Algebra, Real Analysis.

RESEARCH

Interests: theoretical computer science, algorithms, combinatorial optimization, cryptography, computational geometry, lattices, complexity, approximation algorithms, combinatorics, discrete mathematics.

Student Researcher

Aug. 2024 - Present

Cornell University CS Dept., Advisors: Dr. Anke Van Zuylen and Dr. Matthew Eichhorn

- Conducts research to develop an approximation algorithm for the longest k -repeated subsequence problem by exploring the problem's innate algebraic structure and its combinatorial properties.
- Invited to present findings at University of Michigan Theory Seminar

Final Project, CS 6840: Algorithmic Game Theory

Aug. 2024 - Present

Cornell University, Professor: Dr. Eva Tardos

- Applies the notion of altruism (i.e. each player's payoff considers the overall social welfare) to research project selection problem in which researchers payoff is their expected amount of 'credit' they receive.

Algorithms Researcher

May - Aug. 2024

Montana State University, Advisor: Dr. Brendan Mumey

- Research Experience for Undergraduates (REU) program, funded by NSF Award No. 2243010
- Created integer linear program to construct phylogenetic trees of tumor samples in Python using Gurobi.
- Implemented algorithm that finds most 'essential' phylogenetic relationships in Python using NumPy, Pandas.
- Keywords: Algorithms, combinatorial optimization, integer linear programming, computational biology.

Final Project, CS 6850: Networks

Aug. - Dec. 2023

Cornell University, Professor: Dr. Jon Kleinberg

- Collaborated with three graduate students to modify an existing differential privacy algorithm to improve performance on several metrics e.g. community discovery, node influence, degree distribution, and topological structure.

Math Directed Reading Program

Aug. - Dec. 2023

Cornell University, Advisor: Dr. Eray Karabiyik

- Conducted collaborative study on elliptic curves and their application to cryptography.

TEACHING

TA, CS 4820: Analysis of Algorithms

Fall 2024

Cornell University, Professor: Anke van Zuylen

- TA for 300 person, required CS course covering algorithm design (greedy, divide and conquer, dynamic programming, network flow), computability theory, and algorithm techniques for intractable problems.
- Holds weekly office hours, grades homework and exams, assists with creating and presenting review recitation lectures

Head TA, CS 2800: Discrete Structures

Spring 2024, Spring 2025 (expected)

Cornell University, Professors: Anke van Zuylen, Eva Tardos

- Head TA for 400 person, required CS course covering proof-writing, induction, logic, probability, and set theory.
- Created rubrics for homework and exams and led team of 15 TAs through grading.
- Taught weekly discussion section (25 students) and held weekly office hours.
- Led review lectures, created supplemental material: robynburger.github.io/cs2800.

TA, Content Liaison, CS 2800: Discrete Structures

Spring 2023, Fall 2023

Cornell University, Professors: Anke van Zuylen, Matthew Eichhorn and Noah Stephens-Davidowitz

- Taught weekly discussion section (25 students), held weekly office hours.
- Assisted in facilitation of ‘Academic Excellence Workshop’ (AEW) supplemental course by designing review material.
- Advocated for students’ needs to AEW instructors.

LEADERSHIP & SERVICE

President, Association of Computer Science Undergraduates

Dec. 2023 - Present

Cornell University

- Oversee all functions of the largest CS club at Cornell, with over 500 active members.
- Collaborate with Cornell faculty, staff of the DEI office, and peers to plan and execute college-wide events such as Research Night, Faculty Luncheon, and mentorship program: <https://acsu.cornell.edu/>

President, Triphammer Co-op

Dec. 2023 - Present

Cornell University

- Manages daily and administrative logistics of 20-person, student-governed cooperative residence.
- Oversees management of 6-figure reserve account and maintenance of facilities.
- Attends biweekly meetings with Cornell administration to ensure compliance and advocate for house needs.
- Collaborates with other cooperative residences to plan and execute housing application process.

PE Instructor, Cornell Outdoor Education

Dec. 2023 - Present

Cornell University

- Teaches physical education courses for 16-20 students of all levels
- Creates and executes lesson plans, ensures safety of students.
- Overnight weekend courses: PE 1601: Backcountry Cooking, PE 1630: Caving
- Weekly courses: PE 1610: Basic Rock Climbing, PE 1646: Intermediate Rock Climbing
- Courses for underrepresented minorities: PE 1641 Basic Rock Climbing: Closing the Adventure Gap, PE 1642: Women’s Basic Rock Climbing

WORK EXPERIENCE

Backend Software Engineer

May - Sep. 2023

Web Development Team, SC Johnson College of Business IT

- Spearheaded the modernization of legacy PHP code by re-implementing in Ruby on Rails, JavaScript, HTML.
- Identified and resolved intricate bugs across multiple servers and extensive programs, presented weekly deliverables.

AWARDS

Sphinx Head Honors Society

Fall 2024

- One of 40 seniors inducted in the 134th tapping class of Cornell’s oldest senior honor society
- Considered "the highest non-scholastic honor within reach of undergraduates" by the New York Times

Cornell CS DEIB 2024 “Most Impactful Student” award

April 2024

- Peer nominated, awarded by the office of Diversity, Equity, Inclusion, and Belonging.
- This award recognizes a graduate or undergraduate student who has committed to creating a more inclusive culture within Cornell Bowers CIS and broadly in the fields of computing and information science.

TA Excellence Award

Spring 2024

- Granted by my professor in recognition of my work as head TA for CS 2800 in Spring 2024.

GRANTS

- National Center for Women & Information Technology Travel Support Stipend (\$2,500)
- Cornell Bowers CIS Tapia Conference scholarship (\$1,500)

Programming

Rust, Python, Java, OCaml, C, Ruby (on Rails), GitHub, Unix, L^AT_EX