

Anmol Kabra

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Education

Cornell University, Ithaca, NY

Expected May 2020

B.S. in Computer Science, Honors Candidate, GPA: 4.2/4.3

Academic Interests	Applied Math with a focus on Machine Learning and Optimization; Sustainability
Current Coursework	Math of Data Science (Graduate-level), Operating Systems, Machine Learning Seminar (Graduate-level)
Past Coursework	Machine Learning, Matrix Computations (Graduate-level), Algorithms, Numerical Analysis: Linear & Non-linear Problems, Math Foundations of the Info Age, Unix Tools & Scripting, Computational Physics
Course Staff	Math Foundations of the Info Age – Spring 2019, Functional Programming – Fall 2018, Spring 2018 (Course Staff Award), Discrete Math – Fall 2017

Experience

Computational Sustainability Lab, Cornell University

Jun 2017 – Present

Research Assistant

- Design machine learning models to reduce bias in citizen-science datasets, improving datasets' suitability for scientific modeling.
- Work with Prof. Carla Gomes and 10+ graduate students to devise new parallel-computing-powered techniques for optimization problems in sustainability.
- Redesigned optimization models for understanding user behavior and incentive distribution compared to previous state-of-the-art. Our work using neural networks outperforms the mixed-integer programming model on scalability and speed, thus allowing scalable model deployment in eBird dataset.
- Presented a lightning talk and poster on GPU-accelerated bias reduction in citizen science at the 2018 Doctoral Consortium on Computational Sustainability.

Access:

CompSust Doctoral Consortium	Slides – anmolkabra.com/docs/avicaching-compsust-dc-fa18-talk-slides.pdf • Poster – anmolkabra.com/docs/avicaching-compsust-dc-fa18-poster.pdf
Solving the Avicaching Game Faster and Better (submitted to ACM COMPASS 2019)	Report – anmolkabra.com/docs/avicaching-summ17-report.pdf • Code – github.com/anmolkabra/avicaching-summ17

Cornell Cup Robotics Team, Cornell University

Feb 2017 – Dec 2017

CS Sub-team Lead for SwarmBot-MiniBot

- Spearheaded the SwarmBot concept in a team of 5 and MiniBot project in a team of 30+ students, employing graduate-level Systems Engineering tools. SwarmBot-MiniBot was featured by Cornell Engineering in World Maker Faire 2017.
- Negotiated high-priority, med-priority, and optional features in MiniBot concept with product client, and co-implemented design frameworks with 3 CS Sub-team leads.
- Iteratively built robots with inter-robot networking, vision tracking, and discoverability features. Designed and implemented network protocols on top of TCP/IP and UDP protocols using ZeroMQ library; modified robots' startup code to improve user-side accessibility.

Projects

Free Two-way Caller, ECE 3140 Final Project

Apr 2018 – May 2018

Access: youtu.be/CrvAqq5a0OA

- Built a two-way low-level calling device using ARM-based microcontroller development boards in a team of 2.
- Programmed call states and inter-board communication using SPI, and programmed voice data transfer to emulate voice calls.

A Modular Approach to Optimal Hybrid Bus Allocation for TCAT, CMCM

Nov 2017

Access: anmolkabra.com/docs/cmcm-fa17-report.pdf

- Competed in a team of 3 in Cornell Mathematical Contest in Modeling (CMCM), a 3-day modeling hackathon, to study optimal allocation of hybrid buses in Ithaca.
- Designed approximation algorithms and simulations to reduce bus operators fuel expenditure and vehicle emissions on multiple bus routes, factoring in regenerative braking, changes in elevation, and operation times.

Term-monopoly, CS 3110 Final Project

Oct 2017 – Dec 2017

Access: github.com/anmolkabra/term-monopoly

- Created a Unix/Linux terminal-based customizable framework in a team of 4 for playing Monopoly.
- Co-designed the central interface to the framework in OCaml: iteratively integrated model and controller with view in MVC design, and programmed user events and class abstractions.

Potential of Conversion of Waste to Energy in India, IIT, Guwahati

Jul 2013 – Aug 2013

Access: anmolkabra.com/docs/potential-conversion-waste-energy.pdf

- Project adjudged outstanding at the 20th National Children's Science Congress. Proposed waste segregation and feasibility analysis schemes to Municipal Corporation of Patna, India and Chief Minister of Bihar, Nitish Kumar.
- Collaborated in a team of 5 to map the feasibility of waste-to-energy conversion techniques in Patna.
- Conducted carbon, nitrogen, and calorific content experiments on waste collected from different living environments, in collaboration with doctoral students from IIT, Guwahati.

Honors

2018	Tau Beta Pi Engineering Honor Society	Tau Beta Pi, Cornell University
2017-20	Telluride Scholar (Room and Board scholarship at Cornell)	Telluride Association
2016-20	Tata Scholar (Full-ride to Cornell)	Cornell University
2016-19	Dean's List (all semesters)	Cornell University
2015-16	National Talent Search Scholar	NCERT, Govt. of India
2015	Live video conference with Indian Prime Minister, Narendra Modi	Ministry of HRD, Govt. of India
2013	Child Scientist at IIT, Kharagpur	Dept. of Science & Technology, Govt. of India

Activities/Service

Telluride House, Cornell University

Jan 2017 – Present

Chair of Admissions Committee, Housemember

- Lead Admissions Committee, and coordinate 100+ application readings and evaluation meetings with 20+ housemembers. Chair admission meetings and work with Telluride Association staff to recruit future housemembers.
- Collaborate with House committees to manage House's website and digital outreach.
- Automated tabulation in Telluride Association's summer program application management system in Spring 2018, saving more than 100 hrs of annual manpower. Used Google APIs to tabulate, filter, and transfer reading responses to master spreadsheets.

Association of Computer Science Undergraduates, Cornell University

Aug 2017 – Present

Research Lead

- Manage research initiatives for undergrads at Cornell CS Department, working with faculty, staff, and 10+ ACSU officers to introduce undergrads to CS research. Some examples of initiatives: research talks by undergrads, reading groups, poster sessions.
- Organize general-body meetings, faculty lunches, and introductory CS workshops.