

UTHSAV CHITRA

35 Olden Street, Princeton, NJ 08540

Website: <https://uthsavc.github.io>

EDUCATION

Princeton University, Princeton, New Jersey

Sept 2018 - May 2023 (expected)

Advisor: Ben Raphael

Ph.D. Candidate in Computer Science

M. A. in Computer Science

Received Sept 2020

Brown University, Providence, Rhode Island

Sept 2013 - May 2017

Sc.B. Mathematics, A.B. Computer Science, A.B. Applied Math

GPA: 4.0/4.0

PUBLICATIONS

* denotes joint first authorship

Belayer: Modeling discrete and continuous spatial variation in gene expression from spatially resolved transcriptomics.

Cong Ma*, **Uthsav Chitra***, Shirley Zhang, Benjamin J. Raphael.

Cell Systems (2022). Previously appeared at *RECOMB 2022*.

NetMix2: Unifying network propagation and altered subnetworks.

Uthsav Chitra*, Tae Yoon Park*, Benjamin J. Raphael.

International Conference on Research in Computational Molecular Biology (RECOMB) 2022.

Quantifying and Reducing Bias in Maximum Likelihood Estimation of Structured Anomalies.

Uthsav Chitra, Kimberly Ding, Jasper C. H. Lee, Benjamin J. Raphael.

International Conference on Machine Learning (ICML) 2021.

NetMix: A network-structured mixture model for reduced-bias estimation of altered subnetworks.

Matthew A Reyna*, **Uthsav Chitra***, Rebecca Elyanow, Benjamin J. Raphael.

Journal of Computational Biology (2021). Previously appeared at *RECOMB 2020*.

Analyzing the Impact of Filter Bubbles on Social Network Polarization.

Uthsav Chitra, Christopher Musco.

ACM International Web Search and Data Mining Conference (WSDM) 2020.

Random Walks on Hypergraphs with Edge-Dependent Vertex Weights.

Uthsav Chitra, Benjamin J. Raphael.

International Conference on Machine Learning (ICML) 2019.

Committee Selection is More Similar Than You Think: Evidence from Avalanche and Stellar.

Tarun Chitra, **Uthsav Chitra**.

Manuscript, 2019.

HONORS AND AWARDS

Siebel Scholar award

2022

- Award of \$35,000 for students in their last year of graduate school.

Best Reviewer Award, International Conference on Machine Learning (ICML)

2021, 2022

NSF Graduate Research Fellowship

2020

Jerome Stein Memorial Award, Brown University Applied Math Department

2017

- Given to the top two students who “show outstanding potential in an interdisciplinary area that involves applied mathematics.”

Phi Beta Kappa, Brown University (elected junior year, top 2% of class) *2016*

Top 200, William Lowell Putnam Math Competition *2015*

First Place, Brown University Hartshorn-Hypatia Math Examination *2013*

Semi-finalist, Siemens Competition (research project in number theory) *2012*

TEACHING

Instructor/Curriculum Developer, Princeton Prison Teaching Initiative *2019-Present*

- Teaching college-accredited math and computer science classes at NJ state prisons.
- Developed Java programming course for NJ state prisons.

Teaching Assistant/Grader, Brown University

- **MATH 1560:** Number Theory *Spring 2016, Spring 2017*
- **CSCI 1570:** Design and Analysis of Algorithms *Fall 2015, Fall 2016*
- **CSCI 1450:** Probability in Computing *Spring 2015*
- **CSCI 0530:** Linear Algebra for CS *Fall 2014*
- **MATH 1530:** Abstract Algebra *Spring 2014*

Counselor, Program in Mathematics for Young Scientists (PROMYS) *Summer 2014*

- Counselor for summer program that introduces high school students to higher math through elementary number theory.

Teaching Assistant, Art of Problem Solving *2012-2016*

- Assisted online, real-time math classes in algebra, number theory, combinatorics, and geometry.

TALKS

NetMix2: Unifying network propagation and altered subnetworks

Conference on Research in Computational Molecular Biology (RECOMB) *May 2022*

NetMix: A network-structured mixture model for reduced-bias estimation of altered subnetworks

Conference on Research in Computational Molecular Biology (RECOMB) *June 2020*

Princeton University Generals Exam *May 2020*

Analyzing the Impact of Filter Bubbles on Social Network Polarization

ACM International Web Search and Data Mining Conference (WSDM) *February 2020*

KDD WISDOM Workshop *August 2019*

Random Walks on Hypergraphs with Edge-Dependent Vertex Weights

SIAM Conference on Discrete Mathematics *June 2022*

Princeton University Generals Exam *May 2020*

International Conference of Machine Learning (ICML) *June 2019*

STUDENTS ADVISED/MENTORED

Sunay Joshi, Princeton math undergraduate *2022-present*

- *Statistical models for differential abundance estimation in single-cell data*

Madelyne Xiao, Princeton CS PhD student *2022-present*

- *Accounting for covariates in statistical tests of somatic mutations in cancer*

- Ahmed Shuaibi, Princeton QCB PhD student 2021-present
- *Learning pairwise and higher-order interactions between somatic mutations in cancer*
- Kimberly Ding, Princeton CS undergrad 2019-2021
- Fall 2019: *Recommender Systems with Hypergraph Random Walks*
 - Spring 2020: *Maximum Likelihood Estimation of Structured Anomalies*
 - Senior Thesis 2020-2021: *Spatial-NetMix: Less Biased and More Flexible Anomaly Detection*
– Received the “**Outstanding Computer Science Senior Thesis Prize**”
- Shirley Zhang, Princeton CS undergrad/alumni Summer 2020, 2021-2022
- Summer 2020: *Learning DAGs using continuous optimization*
 - 2021-2022: *Modeling spatial variation in spatial transcriptomics*
– Received an **NSF Graduate Research Fellowship**

SERVICE/OUTREACH

Conference Reviewing

RECOMB 2020 poster session, ICML 2021 (**Top 10% Reviewer**), NeurIPS 2021, ICML 2022 (**Top 10% Reviewer**)

Journal Reviewing

Bioinformatics, Frontiers in Big Data

Member, Princeton COS Graduate Student Committee

2022

Member, Princeton COS Ad Hoc Committee

2021

Member, Princeton Graduate Engineering Council

2021-Present

Officer, Brown Math Departmental Undergraduate Group

2015-2017

Mentor, Brown Matched Advising Program for Sophomores

2016-2017

WORK EXPERIENCE

Software Engineer, Facebook

2017-2018

- Built infrastructure, machine learning models, and data pipelines for improving ad quality.

Software Engineering Intern, Facebook

Summer 2016

- Worked on various video ads projects.

Hobbies/interests: **Bouldering**, puzzles, current events, making bad puns.