Uthsav Chitra

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Website: https://uthsavc.github.io

Education

Princeton University, Princeton, New Jersey   *Sept 2018 - Present*
  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 distinct cell type clusters and continuous variation of expression in spatial transcriptomics from layered tissues.
Cong Ma*, **Uthsav Chitra***, Shirley Zhang, Benjamin J. Raphael. *International Conference on Research in Computational Molecular Biology (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 (JCB) 2021.* Previously appeared at the *International Conference on Research in Computational Molecular Biology (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

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 (elected junior year, top 2% of class)   *2016*
Top 200, William Lowell Putnam Math Competition   *2015*
Semi-finalist, Siemens Competition (research project in number theory)   *2012*

Teaching

Instructor/Curriculum Developer, Princeton Prison Teaching Initiative   *2019-Present*
- Teaching college-accredited math classes at NJ state prisons.
- Developing Java programming course to be taught in 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

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

Princeton University Generals Exam   *May 2020*
International Conference of Machine Learning (ICML)   *June 2019*

Students Advised/Mentored

Ahmed Shuaibi, Princeton QCB grad student   *2021-present*
- *Learning pairwise and higher-order genetic interactions*

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*
  - Kimberly won the "**Outstanding Computer Science Senior Thesis Prize**" for her thesis.

Shirley Zhang, Princeton CS undergrad/alumni   *Summer 2020, 2021-Present*
- Summer 2020: *Learning DAGs using continuous optimization*
- Fall 2021-Present: *Modeling spatial variation of cell types in spatial transcriptomics*

Service/Outreach

Conference Reviewing
RECOMB 2020 poster session, ICML 2021 (**Top 10% Reviewer**), NeurIPS 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 some infrastructure/machine learning models/data pipelines for ads.

Software Engineering Intern, Facebook   *Summer 2016*
- Worked on various video ads projects.

Hobbies/interests: Indoor and outdoor bouldering (check out my Instagram!), attempting crosswords and other puzzles, bad puns.