

Yangxinyu Xie

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Education

2021 – 2022 **Master of Science**, University of Texas at Austin, *Computer Science*.

2017 – 2021 **Bachelor of Science**, University of Texas at Austin, *Computer Science, Mathematics*.
GPA: 3.92

Publications

- 2021
- Xie, Y, Kulpanowski, D, Ong, J, Nikolova, E, Tran, NM. Predicting Covid-19 emergency medical service incidents from daily hospitalization trends. *Int J Clin Pract.* 2021; 00:e14920. doi:10.1111/ijcp.14920
 - Xie, Y. On 2×2 Tropical Commuting Matrices. *Linear Algebra and its Applications*, 620, 92-108.
- Preprint
- Tran, NM, Xie, Y. Improving random walk rankings with feature selection and imputation. *Accepted at IEEE BigData Cup 2021.*
 - Ong, J, Kulpanowski, D, Xie, Y, Nikolova, E, Tran, NM. OpenEMS: an Open-source Package for Two-Stage Stochastic and Robust Optimization for Ambulance Location and Routing with Applications to Austin-Travis County EMS Data.

Honors and Awards

- 2021 **Science4cast Competition 2nd Place Winner**, *IEEE BigData Cup Challenges*, Institute of Advanced Research in Artificial Intelligence, Vienna, Austria.
- 2021 **UT Austin Member**, *Academy of Undergraduate Researchers Across Texas*.
- 2021 **George H. Mitchell Student Awards Semi-Finalist**, *Student Success Initiatives*, University of Texas at Austin.
- 2021 **Smart City Hackathon 1st Place Winner**, *Good Systems*, University of Texas at Austin.
- 2021 **Cactus Standout Award**, *Cactus Yearbook*, University of Texas at Austin.
- 2019 **Second Year Excellence Award**, *College of Natural Sciences*, University of Texas at Austin.
- Fall 2017 **Dean's List**, *College of Undergraduate Studies*, University of Texas at Austin.

Scholarships, Fellowships and Grants

- 2021 **Graduate School Application Financial Aid Program**, *oSTEM, Queer in AI*.
- 2021 **Student Fellow**, *College of Undergraduate Studies*, University of Texas at Austin.
- 2021, 2020 **AMS Undergraduate Travel Grants for Joint Mathematics Meeting**.

Research Experience

- Spring 2020 - Present **Matrix Rigidity**, *Supervised by Dr. Anna Gal.*
Survey recent advances in matrix rigidity and computational complexity
- Summer 2021 **Topic Mining from Covid-19 Twitter Data**, *Supervised by Dr. Johann Gagnon-Bartsch and Juejue Wang*, Big Data Summer Institute, University of Michigan.
Integrated the state-of-the-art NLP models to understand topics around Covid-19 vaccine discussions on Twitter in 2021
- Fall 2020 - Spring 2021 **Optimizing EMS Responses during Extreme Events**, *Supervised by Dr. Ngoc Mai Tran.*
Gave a detailed analysis of current performance of the Austin Travis County EMS department
- Summer 2020 **Strictly Second Shortest Simple Path**, *Supervised by Dr. Vijaya Ramachandran.*
Investigated graph theoretical tools to look for strictly second shortest simple path in simple graphs with strictly positive edges
- Fall 2019 **Machine Learning for Identifying Disease Markers**, *Supervised by Dr. Livia S. Eberlin.*
Investigated Relaxed Lasso and Support Vector Machines to classify biological samples from molecular imaging data

Research Presentations

Talks

- 2021
- Improving random walk rankings with feature selection and imputation. IEEE International Conference on Big Data, Virtual, December, 2021.
 - Public Opinions on COVID-19 Vaccines from Social Media: A Machine Learning Study. oSTEM 2021 Symposia, Virtual, October, 2021.
 - Optimizing Ambulance Allocation and Routing During Extreme Events. Smart Cities Consortium, Good Systems, University of Texas at Austin, Austin, TX, January, 2021.
- 2020
- Matrix Rigidity, Algebraic and Combinatorial Techniques. 3rd Bringing Young Mathematicians Together Conference, Universitat de Valencia, Virtual, December, 2020.
 - Matrix Rigidity, Algebraic and Combinatorial Techniques. Gulf Coast Undergraduate Research Symposium, Rice University, Virtual, October, 2020.
- 2019
- On Tropical Commuting Matrices. Forty-Seventh Annual Conference, Miami University, Oxford, OH, September, 2019.
 - On 2 by 2 Tropical Commuting Matrices. Southeastern Undergraduate Mathematics Workshop, Georgia Institute of Technology, Atlanta, GA, August, 2019.

Poster Presentations

- 2021
 - Public Opinions on COVID-19 Vaccines from Social Media: A Machine Learning Study. Third Conference on Statistics and Data Science, Salvador, Virtual, October, 2021.
 - Optimizing EMS Responses during Extreme Events. MAA Undergraduate Poster Session, Joint Mathematics Meetings, January, 2021. *Honorable Mention Poster.*
- 2020
 - Optimizing EMS Responses during Extreme Events. COVID-19 Conference, University of Texas at Austin, Austin, TX, November, 2020.
 - On Tropical Commuting Matrices. MAA Undergraduate Poster Session, Joint Mathematics Meetings, Denver, CO, January, 2020.
- 2019
 - On Tropical Commuting Matrices. Undergraduate Mathematics Symposium at University of Illinois at Chicago, Chicago, IL, November, 2019.

Attendance

- November 2021 **Professional Development Summit, oSTEM**, Atlanta, GA.
- October 2021 **Statistics Undergraduate Research Experience (SURE)**, *Southern Regional Council on Statistics (SRCOS) Summer Research Conference.*
- August 2021 **Diversity Mentoring Program**, *Joint Statistical Meeting*, Virtual.
- June 2021 **Random Structures in Optimizations and Related Applications Summer School**, *School of Mathematics at the University of Minnesota*, Virtual.
- May 2021 **New Horizons in Theoretical Computer Science Summer School**, *ACM Special Interest Group on Algorithms and Computation Theory*, Virtual.
- February 2020 **Games, Decisions, Risk and Reliability (GDRR) Undergraduate Workshop**, *The Statistical and Applied Mathematical Sciences Institute*, Durham, NC.
- July 2019 **Undergraduate Workshop in Geometry and Topology**, *University of Notre Dame*, Notre Dame, IN.
- July 2019 **Undergraduate Knot Theory Conference**, *University of Washington at Bothell*, Bothell, WA.
- February 2019 **Undergraduate Workshop**, *The Statistical and Applied Mathematical Sciences Institute*, Durham, NC.
- October 2018 **Modern Math Workshop**, *SACNAS National Conference*, San Antonio, TX.

Participation

- Spring 2020 **Directed Reading Program**, *Department of Mathematics, University of Texas at Austin.*
Knots, Links and Spatial Graphs. Supervised by Alexandra Embry
- June 2019 **Undergraduate Modelling Workshop**, *The Statistical and Applied Mathematical Sciences Institute.*
Allison Duprey, Fanuel Sisay, Natasha Stewart, and Yangxinyu Xie. "Along the SINDy Frontier: Sampling for Equation Learning Methods". Supervised by Dr. John Nardini

Spring 2019 **Directed Reading Program**, *Department of Mathematics, University of Texas at Austin*.

Introduction to Support Vector Machines, as an example of convex optimisation. Supervised by Wenbo Zhang

Teaching

Spring 2020 **Undergraduate Proctor**, *Department of Computer Science, University of Texas at Austin*.

- Algorithms and Complexity: Honors

Spring 2020 **Undergraduate Grader**, *Department of Mathematics, University of Texas at Austin*.

- Predictive Analytics

Fall 2019 **Undergraduate Grader**, *Department of Mathematics, University of Texas at Austin*.

- Discrete Mathematics

- Applied Regression and Time Series

Service

Leadership Positions

Spring 2021 – **DEI Committee Member**, *ACM For Change, University of Texas at Austin*.
Present

Fall 2020 – **Event Coordinating Officer**, *Mathematicians of Color Alliance of Texas, University of Texas at Austin*.
Present

Fall 2020 – **UGS Alumni Guide**, *College of Undergraduate Studies, University of Texas at Austin*.
Spring 2021

Fall 2018 – **UGS Ambassador**, *College of Undergraduate Studies, University of Texas at Austin*.
Spring 2021

Spring 2020 **Coding in the Classroom Volunteer - Texas School for the Blind and Visually Impaired**, *Department of Computer Science's outreach initiatives, University of Texas at Austin*.

Spring 2019 **ExploreUT Volunteer**, *Department of Computer Science's outreach initiatives, University of Texas at Austin*.

Fall 2018 **Hour of Code Volunteer**, *Department of Computer Science's outreach initiatives, University of Texas at Austin*.

Summer 2018 **Dean's Squad Leader**, *Office of the Dean of Students, University of Texas at Austin*.

Presentations

2021 ○ What are tropical commuting matrices? What is ... series, *Mathematicians of Color Alliance of Texas, University of Texas at Austin, October, 2021*.

○ Establishing the Mathematicians of Color Alliance of Texas. *Outreach Poster Session, MAA MathFest, August, 2021*.

Professional Experience

- Summer 2019 **Software Engineering Intern**, *Sense Talent Labs*, San Francisco, CA.
- Led effort to allow sales team to have different sense demo agencies.
 - Copied and migrated MySQL database for Sense demo agency.
- 2018–2019 **Data Science Innovation Fellow**, *UT OnRamps*, Austin, TX.
- Identified concerning language from student surveys using sentiment analysis.
 - Analysed distributions and text clouds from student survey results using R and Qualtrics.
- 2018 – 2019 **ProjectLEAD**, *Leadership and Ethics Institute*, University of Texas at Austin.

Skills

Fluent Python, R, \LaTeX
Intermediate Java, C#, C, C++, SQL
Basic HTML, Shell