Junsheng Liu

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EDUCATION

WASHINGTON UNIVERSITY IN ST. LOUIS

Expected Graduation: Aug 2026

PhD in Computer Science

UNIVERSITY OF SOUTH CAROLINA, COLUMBIA

Graduation: Aug 2023

Master in Mathematics *Cumulative* GPA: **4.0**/4.0

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Graduation: May 2021

Bachelor of Science in Electrical Engineering with highest distinction *Cumulative* GPA: **3.86**/4.0

Bachelor of Science in Mathematics with highest distinction

TECHNICAL SKILLS

Programming Languages: Python, Matlab, Mathematica, C, C++, R, LaTeX, Pytorch

AWARDS&HONORS

The Mathematical Contest in Modeling March 2019

- Honorable Mention

Higher Honor in Budapest Semesters in Mathematics May 2020

Mrs E. J. Hoover Scholars Aug 2020

Mrs E. J. Hoover Scholars Aug 2021

Dean Fellowship at University of South Carolina Aug 2022

CSE Scholar Award at Washington University in St. Louis Aug 2023

EXPERIENCE&ACTIVITIES

Independent study on Cryptocurrency Markets May 2020-June 2021

1. Develop quantitative methods on perpetual contracts for cryptocurrency
2. Construct reinforced learning model based on tickers in equity market and technical features
3. Wrote APIs connecting data providers and own portfolio

Independent study (Prof Ervin Gyori, Alfréd Rényi Institute of Mathematics**)** May 2020-June 2021

1. Find different examples on tree with 8, 16 or more vertices which are set sequential
2. Discover necessary conditions for an odd degree tree to be set sequential
3. Prove certain odd trees with some properties are set sequential with different constructing methods
4. Provide insights for all odd trees are set sequential by a pairing conjecture

Mathematical Research (Prof Eva Czabarka, University of South Carolina, Columbia) Aug 2021-May 2023

1. Develop systems to find maximum crossing number for tanglegram via fix parameter tractable property
2. Explore the gap between the possible maximum crossing number for tanglegram of certain size

3. Prove certain types of tanglegrams can reach extreme bounds and solve the conjecture
4. Wrote and modified OCaml codes for testing

Computer Science Research (Prof Netanel Raviv, Washington University in St. Louis) Aug 2023-

1. Prove redundancy and rate of 2D and 3D nonlinear coding
2. Study different error-correcting codes and apply them to 2D and 3D cases

PUBLICATIONS

1. Eckels, Emily N., Győri, Ervin, Liu, Junsheng and Nasir, Sohaib. "Set-Sequential Labelings of Odd Trees" Discussiones Mathematicae Graph Theory, https://doi.org/10.7151/dmgt.2439
2. Czabarka, Eva, Liu, Junsheng and Székely, Laszlo. "The gap of the tanglegram crossing number" Electronic Journal of Combinatorics
3. Liu, Junsheng and Raviv, Netanel, Single Fragment Forensic Coding From Van der Corput Sets, International Symposium on Information Theory (ISIT), 2025
4. Liu, Junsheng and Raviv, Netanel, Improvement for torn paper codes by local alignment technique, International Symposium on Information Theory (ISIT), 2026

TEACHING & RELATED ACTIVITIES

1. Teaching assistant for MATH141, University of South Carolina, Columbia, 2021fall
2. Teaching assistant for MATH142, University of South Carolina, Columbia, 2022spring
3. Maintenance and development of math placement test for all students, University of South Carolina, Columbia, 2022-2023