

Cory Glover, M.S.

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Education

- PhD Candidate in Network Science, Mathematics Emphasis, Northeastern University, 2021-2026
- M.S. in Network Science, Northeastern University, 2021-2025
- M.S. in Mathematics, Brigham Young University, 2019-2021
- B.S. in Mathematics, Applied and Computational Emphasis, Brigham Young University, 2014-2019

Research

- Physical Networks with Dr. Albert-László Barabási
 - Develop models to understand self-organizing networks such as DNA, neuronal networks, material networks, and protein complexes
 - Utilize tools from information theory and Bayesian statistics to perform inverse design of self-organizing networks
 - Create new metrics to measure properties of physical networks such as polymers and the brain
 - Study the role of and the genesis of entanglement in physical networks using topological approaches
 - Teach myself technical concepts from statistical physics, knot theory, graph theory, and material science
 - Prepare presentations and peer-reviewed publications to disseminate research
- Network Reconstruction with Dr. Brennan Klein
 - Lead research group of four students to study state-of-the-art methods used for network reconstruction from time series data
 - Develop pipeline using Bayesian inference for studying structural biases of state-of-the-art reconstruction methods
 - Code extensive experiments using common network packages in Python such as GraphTool and NetworkX
 - Apply techniques from information theory to understand the biases in networks reconstructed from time series
- Spectral Graph Theory with Dr. Mark Kempton, 2019-2021
 - Led research project studying spectral properties of the non-backtracking matrix of a network
 - Developed a new centrality measure based on PageRank
 - Collaborated with research team to create an efficient clustering algorithm based on PageRank
 - Prepared presentations and peer-reviewed publications to disseminate research

- Petal Projection with Dr. Mark Hughes, 2018-2019
 - Developed a set of Reidemeister type moves on petal projections of knots in order to identify isomorphic knots given a petal permutation

Research Publications

*Editor's Suggestion †Journal Collection of the Year

- *†**Glover, C.**, & Barabási, A. L. (2024). Measuring Entanglement in Physical Networks. *Physical Review Letters*, 133(7), 077401.
- Breen, J., Faught, N., **Glover, C.**, Kempton, M., Knudson, A., & Oveson, A. (2023). Kemeny's constant for non-backtracking random walks. *Random Structures and Algorithms*.
- **Glover, C.**, & Kempton, M. (2021). Some spectral properties of the non-backtracking matrix of a graph. *Linear Algebra and its Applications*, 618, 37-57.
- Colton, L., **Glover, C.**, Hughes, M., & Sandberg, S. (2019). A Reidemeister type theorem for petal diagrams of knots. *Topology and its Applications*, 267, 106896.

In Progress

- **Glover, C.**, Van der Kolk, J. and Barabási, A.L.. (in progress). Network Design.
- **Glover, C.**, Weis, E., Ehlert, J., Kumar, S., and Klein, B. (in progress). Deconstructing Reconstruction: Structural Biases in Networks Reconstructed from Time Series Data.
- **Glover, C.** and Barabási A.L.. (in progress). Physical Properties of Entangled Networks.
- Frandsen, S., **Glover, C.**, Cash, R., Blumberger, D., Choi, K. S., ... & Siddiqi, S. (in progress). A dual-circuit causal model of depression in humans.

Additional Publications

- Humphreys, J. & Jarvis, T. (2018). *Lab Manuals for Foundations of Applied Mathematics*. <https://foundations-of-applied-mathematics.github.io>. Brigham Young University. (Contributor)

Teaching Experience

- Teaching Assistant, Computational Linear Algebra, 2021
 - Assist students with Python scripts which implement linear algebra
 - Teach coding basics and standard Python packages (i.e., NumPy, Matplotlib, etc.)
- Teaching Assistant, Modeling with Uncertainty and Data, 2019-2021
 - Assist students with data science topics such as statistical analysis, unsupervised learning, and advanced probability
 - Grade 180 assignments per week
- Instructor, Finite Mathematics, 2020
 - Taught online course involving basic probability and solving systems of equations

- Prepared lectures and exams for class of more than 20 students
- Teaching Assistant, Algorithm Design and Optimization Lab, 2018-2019
 - Taught more than 60 students basics of Python and how to implement mathematical concepts into code
- Class Developer, Modeling with Uncertainty and Data Lab, 2018-2019
 - Developed class materials introducing the Pandas toolkit of Python
 - Designed and created class material on implementing ARMA in Python
- Class Developer, Algorithm Design and Optimization Lab, 2018-2019
 - Developed class materials teaching wavelets, Markov chains, nearest neighbor, and optimization methods
 - Implemented optimization methods in Python
- Class Developer, Mathematical Analysis Lab, 2018-2019
 - Developed class materials teaching the PageRank method and its implementation in Python
- Tutor, 2017-2018
 - Aided students with concepts in real analysis, elementary linear algebra, calculus on several variables, ordinary differential equations, and fundamentals of mathematics

Conferences

*Invited talks

- APS Annual Meeting, *Measuring Entanglement in Physical Networks*, Anaheim, CA, March 2025
- *Joint Mathematics Meetings, *Non-Backtracking Spectrum of Graphs*, Seattle, WA, January 2025
- SIAM MDS, *Deconstructing Reconstruction: Structural Biases in Networks Reconstructed from Time Series Data*, Atlanta, GA, October 2024
- SIAM MDS, *Measuring Entanglement in Physical Networks*, Atlanta, GA, October 2024
- NetSi, *Measuring Entanglement in Physical Networks*, Quebec, CA, June 2024
- Zámeček DYNASNET Workshop, *Effects of Network Topology on Entanglement*, Lednice, Czech Republic, 2023
- NetSi, *Effects of Network Topology on the Entanglement of Physical Networks*, Vienna, Austria, 2023
- Joint Mathematics Meetings, *Fabrication of Physical Networks: Counting Graphs in Three-Dimensional Space*, Boston, MA, 2023
- Joint Mathematics Meetings, *Effects of Backtracking on PageRank*, Boston, MA, 2023
- Zámeček DYNASNET Workshop, *The Fabrics of Physical Networks*, Lednice, Czech Republic, 2022
- Graduate Student Combinatorics Conference, *Non-Backtracking Spectrum of Graphs*,

Minneapolis, Minnesota, 2021

- Brigham Young University Spring Research Conference, *Non-Backtracking Spectrum of Graphs*, Salt Lake City, UT, 2021
- AMS Fall Western Sectional Meeting, *Understanding the non-backtracking spectrum of graphs*, Salt Lake City, UT, 2020
- Brigham Young University Spring Research Conference, *Spectral Properties of Non-Backtracking Random Walks*, Provo, UT, 2020
- Brigham Young University Spring Research Conference, *A Reidemeister Type Theorem On Petal Projections of Knots*, Provo, UT, 2019
- Joint Mathematics Meetings, *A Reidemeister Type Theorem On Petal Projections of Knots*, Baltimore, MD, 2019

Academic Honors

- Outstanding Achievement in Mathematics, Brigham Young University, 2018 - 2019
- Session Winner, Brigham Young University Spring Research Conference, 2019
- Outstanding Achievement in Mathematics, Brigham Young University, 2017 - 2018

Additional Academic Experience

- COMAP MCM/ICM Judge 2025 and 2023
- Acceptance to National Security Agency Graduate Mathematics Program, 2020, Canceled due to COVID-19
- Acceptance to MSRI Summer Graduate School on Random Graphs, 2020, Canceled due to COVID-19

Skills

- Python, Github, NumPy, SciPy, NetworkX, Pandas, Matplotlib, SciKit Learn, GraphTool
- Network Analysis
- Algorithm Design, Optimization Techniques
- Probability, Statistics, and Machine Learning methods
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