Zirou Qiu | Curriculum Vitae

994 Research Boulevard, Charlottesville, VA

zq5au@virginia.edu Homepage GitHub

Research Interests

Combinatorial Optimization; Dynamical Systems; Machine Learning; Learning Theory; Computational Social Science; Computational Epidemiology; Multi-agent Systems; Game Theory;

Publications

- *Assigning Agents to Increase Network-Based Neighborhood Diversity*
  Zirou Qiu, Andrew Yuan, Chen Chen, Madhav Marathe, S.S. Ravi, Daniel Rosenkrantz, Richard Stearns and Anil Vullikanti.
  International Conference on Autonomous Agents and Multiagent Systems (AAMAS, Oral) - 2023 (Acceptance rate: 23.3%).

- *Networked Anti-Coordination Games Meet Graphical Dynamical Systems: Equilibria and Convergence*
  Zirou Qiu, Chen Chen, Madhav Marathe, S.S. Ravi, Daniel Rosenkrantz, Richard Stearns, Anil Vullikanti
  AAAI Conference on Artificial Intelligence (AAAI, Oral) - 2023 (Acceptance rate: 19.6%).

- *Airborne disease transmission during indoor gatherings over multiple time scales: Modeling framework and policy implications*
  Avinash Dixit, Baltazar Espinoza, **Zirou Qiu**, Anil Vullikanti, and Madhav Marathe.
  Proceedings of the National Academy of Sciences (PNAS) - 2023.

- *Understanding the Co-evolution of Mask-wearing and Epidemics : A Network Perspective*
  Zirou Qiu, Baltazar Espinoza, Vitor V. Vasconcelos, Chen Chen, Sara M. Constantino, Stefani A. Crabtree, Luojun Yang, Anil Vullikanti, Jiangzhuo Chen, Jörgen Weibull, Kaushik Basu, Avinash Dixit, Simon Levin, Madhav Marathe.
  Proceedings of the National Academy of Sciences (PNAS) - 2022.

- *Finding Nontrivial Minimum Fixed Points in Networked Dynamical Systems*
  Zirou Qiu, Chen Chen, Madhav Marathe, S.S. Ravi, Daniel Rosenkrantz, Richard Stearns, Anil Vullikanti
  AAAI Conference on Artificial Intelligence (AAAI, Oral) - 2022 (Acceptance rate: 15%).

- *Efficiently Learning the Topology and Behavior of a Networked Dynamical System Via Active Queries*
  (* alphabetical order)
  Daniel Rosenkrantz, Abhijin Adiga*, Madhav Marathe*, **Zirou Qiu***, S.S. Ravi*, Richard Stearns*, Anil Vullikanti*
  International Conference on Machine Learning (ICML) - 2022 (Acceptance rate: 22%).

- *ELRUNA: Elimination Rule-based Network Alignment*
  Zirou Qiu, Ruslan Shaydulin, Xiaoyuan Liu, Yuri Alexeev, Christopher S. Henry, Ilya Safro
  ACM Journal of Experimental Algorithmics (JEA) - 2021.

Research Experience

University of Virginia - Biocomplexity Institute — Advisor: Prof. Madhav Marathe
Graduate Research Assistant — Fall 2020 - **Present**
- Research **graph** problems arise in domains such as dynamical systems, machine learning, social science, and epidemiology.

Clemson University - Algorithms and Computational Science Lab — Advisor: Prof. Ilya Safro
Graduate Research Assistant — Jan 2019 - May 2020
- Study graph problems in computational biology and network science.

Argonne National Laboratory - Data Science Division — Host: Chris Henry & Yuri Alexeev
Graduate Research Aide — Summer 2019
- Investigate topology-based network alignment problems with applications in computational biology.

Education

University of Virginia — Charlottesville , VA
Ph.D. in Computer Science — Aug 2020 - **Present**
Overall GPA: 4.0/4.0

Clemson University — Clemson, SC
Master of Science in Computer Science - Thesis — Aug 2018 - May 2020
Overall GPA: 3.75/4.0

Southeast Missouri State University — Cape Girardeau, MO
Bachelor of Science in Computer Science - Dean's List, Cum Laude — Aug 2013 - May 2018
Major GPA: 3.878/4.0; Overall GPA: 3.708/4.0

Talks

ELRUNA: Elimination Rule-based Network Alignment — May 2020
Clemson Operational Research Institute: Link

Network Alignment & Local Search — Mar 2021
SIGNET seminar, University of Delaware: Link

Skills

- **Research**: Approximation/randomized algorithms; Machine learning theory; Graph theory; Optimization; Large-scale simulations.
- **Proficient Programming Languages**: C/C++; Python
- **Software and Tools**: Linux; Gephi; MySQL; Matlab; R studio

Organizations & Extracurriculars

- **Institute of Electrical and Electronics Engineers** (IEEE) - Student member.
- **Association of Computing Machinery** (ACM) - Student member
- **Society for Industrial and Applied Mathematics** (SIAM) - Student member
- **World Wildlife Fund** (WWF) - Member