Guoning Yu

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EDUCATION

Ph.D. Candidate Fall 2019 – Spring 2024
Mathematics, **Georgia State University**, Atlanta, GA
Advisors: Guantao Chen & Yaroslav I. Molkov
GPA 4.2/4.5

Bachelor of Science, 2015-2019
Mathematics and Applied Mathematics, **Lanzhou University,** Lanzhou, China

Relevant Coursework:

Real/Complex Analysis	ODE/PDE	Database Systems
Combinatorics	Numerical Analysis	Advanced Machine Learning
Probability Theory	Data Structure	Security Investment Analysis

RESEARCH PAPERS

In Graph Theory and Combinatorics:

- *Linear arboricity of degenerate graphs*, 2021, with G. Chen and Y. Hao, Journal of Graph Theory
- *A decomposition method on solving the linear arboricity conjecture*, 2022, with G. Chen and Y. Hao, accepted
- *The degree-f fractional density algorithm in graph edge coloring*, 2022, with G. Chen, under review

In Statistics and Machine Learning:

- *A method on m-uniform hypergraphon estimation and validation*, 2024., in preparation

In Theoretical Neural Science:

- *On the role of sensory feedback and central neuronal interactions in locomotor gait and balance control in quadrupeds*, 2023, with Y. Molkov, etc., in preparation

OTHER REPRESENTATIVE RESEARCH EXPERIENCES

Project on **Alzheimer Disease Prognosis with Clinical Data** 2023/05 – present
Advisor: Dr. Yaroslav Molkov

- Process and analyze clinical data, fit and evaluate authenticate PDE model parameters
- Draw connections between molecular mechanisms of neurotoxicity, biomarkers, and the diagnosis
- Applied gradient-boosted decision tree models

Project on **Neural Mechanisms of Motor Learning from Errors** 2022/12 – present
Advisor: Dr. Yaroslav Molkov

- Statistically identify model the neurocomputational principles underlying motor learning from errors
- Utilize machine learning tools to decode behavioral variables from brain recordings and building predictive models based on behavioral and neural data

The study of **Dynamic Behavior of Brucellosis in Gannan Area** 2017/12 – 2018/07
College Students' Innovation and Entrepreneurship Training Project
Funded by: Lanzhou University

- Developed a propagation model using infection data from Gannan area, established disease dynamics
- Conducted numerical simulations, furnished guidance on agricultural practices and lifestyle management to local pastoral communities

ACADEMIC PRESENTATIONS

AMS 2023 Spring Southeastern Sectional Meeting 2023/03
- A decomposition method on solving the linear arboricity conjecture

Graph Theory Seminar, Georgia Institute of Technology 2023/02
- A polynomial time algorithm for the fractional f-density

Neuroscience 2022 Poster Session 2022/11
- On the role of sensory feedback and central neuronal interactions in locomotor gait and balance control in quadrupeds

34th Midwestern Conference on Combinatorics and Combinatorial Computing 2022/10
- A decomposition method on solving the linear arboricity conjecture

Atlanta Lecture Series in Combinatorics and Graph Theory 2021/08
- Linear arboricity of degenerate graphs

ACTIVITIES AND SOCIAL SERVICES

Course Instructor, Entry-level Undergraduate Courses
Department of Mathematics and Statistics, Georgia State University
- Math 1111 College Algebra Fall 2022
- Math 0999 Support for College Algebra Fall 2021
- Math 1001 Quantitative Reasoning Spring 2021
- Math 1101 Introduction to Mathematical Modeling Spring 2020

President, Student Union 2017/05 – 2018/05
School of Mathematics and Statistics, Lanzhou University
- Administered an organization of 82 students; organized 30+ student events
- Coordinated college academic/employment-oriented lectures; built contact with corporations providing sponsor and jobs for students; assisted with organizing national math/modeling contests

Organizer and Teacher of Mathematics, Children's Welfare Project 2016/07
Xincheng Xijie Primary School, Gannan Tibetan Autonomous Region, Gansu Province
- Organized a 28-day program of social service for children in remote and ethnic minority areas; sponsored by the Lanzhou University Education Development Foundation; reported by China News.

SKILLS AND AWARDS

Skills and tools:
- Programming - C++ | Python | MATLAB | SQL
- Text editing and other tools - LaTeX | Git | CLI with Bash

Awards:
- Second Century Initiative University Doctoral Fellowship 2020/05 – present
- The Fred Massey Graduate Student Award 2022/04 and 2023/03
- Outstanding Student Award of Lanzhou University (top 5%) 2018/10
- Excellent Student Leaders (top 10, among 500 students) 2018/05