

Fangfei (Fei) Lan

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EDUCATION

University of Utah, Salt Lake City, UT

Aug. 2019 – present

Ph.D. in Computer Science

Relevant Coursework: Advanced Algorithms, Data Visualization, Machine Learning, Data Mining, Information Retrieval, Computer Vision, Computational Topology

American University (AU), Washington, DC, Magna Cum Laude

Aug. 2014 – Dec. 2017

B.S. in Mathematics with a second major in Computational Science (Minor: Dance)

RESEARCH INTEREST

Topological data analysis, data visualization, human computer interaction.

SELECTED ACADEMIC PROJECTS

Fangfei Lan, Michael Young, Lauren Anderson, Anders Ynnerman, Alexander Bock, Michelle A. Borkin, Angus G. Forbes, Juna A. Kollmeier, Bei Wang. **Visualization in Astrophysics: Developing New Methods, Discovering Our Universe, and Educating the Earth.**

Eurographics Conference on Visualization (EuroVis), 2021. Computer Graphics Forum, 2021.

- Classify visualization in astronomy research from the past decade and summarize the major progress
- Motivate future direction by identifying the research challenges and opportunities

Fangfei Lan, Sourabh Palande, Michael Young, Bei Wang. **Uncertainty Visualization for Graph Coarsening.**

International Symposium on Graph Drawing and Network Visualization, under review, 2021.

- Develop uncertainty measures to quantify the uncertainty associated to graph coarsening algorithms
- Visualize the uncertainty in multi-run scenarios of various graph reduction algorithms
- Extract analytical insights from several datasets using our technique and visualization framework

Fangfei Lan, David Miller, Bei Wang. **Multivariate Discrete Stratified Morse Theory.** In preparation, 2021.

- Extend the current framework in multivariate discrete Morse theory and develop discrete stratified Morse theory in the multivariate scenario
- Develop algorithms to efficiently perform multivariate topological data analysis

Fangfei Lan, Benwei Shi, Bei Wang, Jeff M. Phillips. **Merge Trees as Mergeable Topological Summaries.** In preparation, 2021.

- Develop methods to efficiently compute the summary of a set of merge trees in the distributed and the streaming settings

RESEARCH EXPERIENCE

University of Utah, Salt Lake City, UT

Graduate Research Assistant

Jan. 2020 – present

Advisor: Bei Wang

Research Interests: Topological data analysis and data visualization

AU Department of Mathematics, Washington, DC

Undergraduate Research Assistant

May 2017 – Oct. 2018

Advisor: Michael Robinson

Project: Acoustics simulation and analysis

- Incorporated advanced physical and mathematical concepts, designed and built software simulations for acoustic instruments in Python
- Analyzed both simulated and real data with dimensionality reduction and clustering techniques
- Presented research results at the February Fourier Talks and the Robyn Rafferty Mathias conference

SAMSI Statistics Workshop, Durham, NC

May 2016

- Constructed a variety of statistical models on a MS patient dataset in R (linear, Poisson, quasi-Poisson, Bayesian), compared the results and presented to a panel of postdocs and professors

PROFESSIONAL EXPERIENCE

Medstar Health Research Institute, Hyattsville, MD

Bioinformatics Analyst

Oct. 2018 – Jul. 2019

- Worked with doctors in numerous disciplines to identify valuable research questions and related patient cohorts of interest
- Extracted EHR data from complex medical databases with various SQL languages and performed extensive data wrangling in R

Green Connections Media, Washington, DC

Software Developer

Feb. 2018 – Nov. 2018

- Regularly communicated technical principles and design concepts with client
- Designed and normalized a relational database schema, built a web application with HMTL, CSS, the Django REST framework and AJAX

AU Department of Mathematics, Washington, DC

Mathematics and Statistics Tutor & Grader

Aug. 2015 – Dec. 2017

- Tutored students from Finite Mathematics, Precalculus to Calculus II and Basic Statistics
- Graded homework for Basic Statistics with Calc, Calc II, Calc III, Differential Equations and Number Theory

SERVICE

Member of the School of Computing Graduate Student Advisory Committee (GradSAC)

Reviewer for IEEE VIS

Reviewer for IEEE TVCG

HONARS & AWARDS

Member of Upsilon Pi Epsilon (international honor society for the computing and information disciplines)

Participant of 2021 GRA-WP Grad Cohort for Women Workshop

SKILLS

Programming Languages:

Proficient: Python, R, HTML & CSS, JavaScript (d3.js)

Basic: SQL, Java

Languages: Mandarin (native), English (fluent)