Zafeiria (Iro) Moumoulidou

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RESEARCH INTERESTS

My research interests lie in the broad area of ethical, equitable, and responsible systems. I focus on issues of *diversity*, data and algorithmic *fairness*, while I am particularly fascinated by the areas of Fair & Explainable AI, Machine Learning, and Recommendation Systems.

EDUCATION

UNIVERSITY OF MASSACHUSETTS　　　　　　　　　　　　　　　　　　　　　　Amherst, MA
Ph.D. in Computer Science, GPA: 3.98/4.00　　　　　　　　　　September 2018-Present

Advisor: Prof. Alexandra Meliou

TECHNICAL UNIVERSITY OF CRETE　　　　　　　　　　　　　　　　　　　Chania, Greece
Diploma (5-year degree) in Electrical & Computer Engineering, GPA: 8.52/10.00　　　August 2018
Thesis: "Dynamic Decision Trees in a Distributed Environment"

Advisors: Prof. Minos Garofalakis, Prof. Antonios Deligiannakis

RESEARCH & ACADEMIC EXPERIENCE

UNIVERSITY OF MASSACHUSETTS　　　　　　　　　　　　　　　　　　　　　Amherst, MA
Research Assistant　　　　　　　　　　　　　　　　　　　　　　　　　Fall 2018-Present

- Research on data diversification and algorithmic fairness
  - Extended Max-Min, a well-established diversification-only model, to support fairness objectives (NP-hard)
  - Designed state-of-the-art algorithms with strong approximation guarantees in general and Euclidean metric spaces for the Fair Max-Min diversification model

Advisors: Prof. Andrew McGregor, Prof. Alexandra Meliou

- Research on data selection schemes for visualization (*on-going work*)
  - Designed a novel intent- and perception-aware data selection scheme for facilitating visual analytics
  - Designed user studies for data collection and evaluation of data selection schemes

Advisors: Prof. Cindy Xiong Bearfield, Prof. Alexandra Meliou

MEGAGON LABS　　　　　　　　　　　　　　　　　　　　　　　　　Mountain View, CA
Research Scientist Intern　　　　　　　　　　　　　　　　　　　June 2021-August 2021

- Research on understanding semantics in structured datasets
  - Curated a novel dataset for semantic type annotation using tabular data extracted from Open Data sources
  - Designed a crowdsourcing data labeling task using automatically generated labels by leveraging knowledge bases
  - Evaluated the performance of state-of-the-art learning-based and language models on this dataset

UNIVERSITY OF MASSACHUSETTS　　　　　　　　　　　　　　　　　　　　　Amherst, MA
Teaching Assistant　　　　　　　　　　　　　　　　　　　　　Fall 2021, Spring 2022

- *Research Methods in Empirical Computer Science* with Prof. David Jensen
- *Database Design and Implementation* with Prof. Yanlei Diao and Prof. Marco Serafini

PUBLICATIONS

[1] **Z. Moumoulidou**, A. McGregor, and A. Meliou. Diverse Data Selection under Fairness Constraints. *In 24th International Conference on Database Theory (ICDT 2021)* 🖺 🖾 ▶

[2] R. Addanki, A. McGregor, A. Meliou, and **Z. Moumoulidou***. Improved Approximation and Scalability for Fair Max-Min Diversification. *In 25th International Conference on Database Theory (ICDT 2022)* 🖺 ▶

   * Authors appear in alphabetical order.

AWARDS & DISTINCTIONS

- Outstanding Academic Performance Scholarship, *Gerondelis Foundation*, (Grant $5,000$)   2019
- Nominated by UMass CICS to apply for the *Microsoft PhD Fellowship*, (1/3 nominations)   2020

PROFESSIONAL SERVICE & OUTREACH

- **External Reviewer:** VLDB 2021 (demonstration track), EDBT 2022 (demonstration track), VLDB 2022, SIGMOD 2022, VLDB 2023, EDBT 2023
- **Journal Reviewer:** The VLDB Journal 2022, International Journal of Data Science and Analytics
- **Volunteer:** PhD Applicant Support Program at CICS UMass, Undegraduate Research Night

INVITED TALKS

- Cornell Database Seminar   April 2023
- Megagon Labs   June 2021

GRADUATE COURSEWORK

- Business Process Optimization, *with Prof. Ahmed Ghoniem* (A)   Fall 2022
- Advanced Topics in Natural Language Processing, *with Prof. Brendan O'Connor* (audit)   Spring 2021
- Advanced Machine Learning, *with Prof. Benjamin Marlin* (A)   Fall 2020
- Randomized Algorithms, *with Prof. Andrew McGregor* (A)   Spring 2020
- Optimization in Computer Science, *with Prof. Madalina Fiterau* (A)   Spring 2020
- Neural Networks: A Modern Introduction, *with Prof. Erik Learned-Miller* (A)   Fall 2019
- Advanced Algorithms, *with Prof. Ramesh Sitaraman* (A-)   Spring 2019

SELECTED ACADEMIC PROJECTS & MANUSCRIPTS

- Max-Min Diversification and Monotone Nonnegative Submodular Functions under Fairness Constraints 🖺
- A Study on Fairness and Diversity in Gender Classification 🖺
- Towards Profiling Fair Classification Approaches 🖺

TECHNICAL SKILLS AND LANGUAGES

- **Programming Languages:** Python, Java, Matlab/GNU Octave, SQL
- **Misc:** Numpy, Pandas, Scikit-learn, PyTorch, Jyputer Notebook, Latex
- **Languages:** *Greek* (native), *English* (CPE Univ. of Cambridge, ECPE Univ. of Michigan), *Spanish* (Diploma Superior C2, Instituto Cervantes), *German* (Goethe-Zertifikat B2)