MIGUEL FUENTES

mmfuentes@umass.edu ◇ https://github.com/Miguel-Fuentes

EDUCATION

University of Massachusetts Amherst *August 2020 — May 2027(expected)*
PhD in Computer Science
Advised by Daniel Sheldon

University of Delaware *August 2016 — May 2020*
Bachelor of Science: Mathematics
Bachelor of Arts: Computer Science

RESEARCH EXPERIENCE

University of Massachusetts Amherst August 2020 —

· Extending Private-PGM algorithm to incorporate public data
· Evaluating privacy-utility trade offs of existing public-data assisted synthetic data algorithms
· Developed and Implemented Probabilistic Model of Bird Movement
· Organized Lab Daniel Sheldon lab reading group and co-founded UMass Differential Privacy reading group

Research in Industrial Projects for Students June 2019 — August 2019
Institute for Pure and Applied Mathematics

· Developed a risk assessment framework for Google's Ads Data Hub (ADH) under the supervision of professor Bao Wang
· Acted as project manager responsible for project deadlines and communication with Google team
· Developed Probabilistic Re-identification Risk and Attacker Threat Estimate (PIRATE) score to measure risk posed to individuals in the ADH system
· Compiled 43 page technical report for internal use at Google

University of Delaware June 2018 — August 2018

· Analyzed neural network activation regions for shallow networks under the supervision of professor Chad Giusti
· Constructed novel non-convex activation region for a two-layer feed forward neural network

PAPERS

B. Mullins, **M. Fuentes**, Yingtai Xiao, Daniel Kifer, Cameron Musco, & Daniel Sheldon. Efficient and Private Marginal Reconstruction with Local Non-Negativity *Advances in Neural Information Processing Systems 37 (2024)*

M. Fuentes, B. Mullins, R. McKenna, G. Miklau, & D. Sheldon. Joint Selection: Adaptively Incorporating Public Information for Private Synthetic Data *Proceedings of The 27th International Conference on Artificial Intelligence and Statistics, 2024.* [Oral Presentation].

M. Fuentes, B. Van Doren, D. Fink, & D. Sheldon. (2023). BirdFlow: Learning seasonal bird movements from eBird data. *Methods in Ecology and Evolution*, 00, 1– 16. https://doi.org/10.1111/2041-210X.14052

M. Fuentes, B. Van Doren, & D. Sheldon. (2021). Modeling Bird Migration by Disaggregating Population Level Observations. *ICML 2021 Tackling Climate Change with Machine Learning Workshop.*

PRESENTATIONS + POSTERS

Theory and Practice of Differential Privacy *August 21, 2024*
Boston, MA
Talk titled: *Joint Selection: Adaptively Incorporating Public Information for Private Synthetic Data*

Artificial Intelligence and Statistics *May 4, 2024*
Valencia Spain
Talk titled: *Joint Selection: Adaptively Incorporating Public Information for Private Synthetic Data*

ICML Tackling Climate Change with Machine Learning Workshop *July 23, 2021*
Virtual Attendance
Poster titled: *Modeling Bird Migration by Disaggregating Population Level Observations*

Joint Math Meetings Session for Applied Mathematics *January 18, 2020*
Colorado Convention Center Denver, CO
MAA General Contributed Paper Session on Applied Mathematics, IV
Presentation titled: *Risk Assessments and Measurements of Privacy Leaks within Google's Ads Data Hub*

Research Experiences for Undergraduates Symposium *October 28, 2019*
Westin Alexandria, Alexandria, VA
Poster titled: *Risk Assessments of Privacy Leaks within Google's Ads Data Hub*

Undergraduate Research & Service Scholar Celebratory Symposium *August 9, 2018*
University of Delaware, Newark, DE
Poster titled: *Perceptron Geometries in Two-Layer Feed Forward Networks*

ACTIVITIES

Co-founder of UMass Differential Privacy Reading Group (2022-2023)
Boston Differential Privacy Summer School 6-10 June 2022
EMBER Research Mentor

HONORS & AWARDS

Spaulding-Smith Fellowship (UMass)
University Honors Program - General Honors Award (UD)

RELEVANT COURSEWORK

CICS 689 (Machine Learning), CICS 614 (Randomized Algorithms), CICS 688 (Graphical Models), CICS 690OP (Optimization), CICS 611 (Advanced Algorithms), CICS 791B (Bayesian Deep Learning Seminar)

SKILLS

Python (JAX, NumPy, PyTorch, matplotlib), MatLab, git, LaTeX