Gregory Dexter

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EDUCATION & SKILLS

Purdue University Main Campus, West Lafayette, IN August 2020 - Present
Ph.D. in Computer Science **GPA: 3.96/4.00**

Purdue University Main Campus, West Lafayette, IN August 2016 - May 2020
Bachelor of Science **GPA: 3.90/4.00**
Majors: Honors-Mathematics; Honors-Statistics. **Minor:** Computer Science
Study Abroad: Tsinghua University, Spring 2019

Programming Languages (Ordered by proficiency):
Python – (Scipy, Scikit-learn, Numpy, Pandas, Pytorch, Tensorflow), C, Java, R, SAS.

EXPERIENCE

Purdue University, West Lafayette, IN January 2021 – Present
Graduate Research Assistant
- Created and theoretically validated a new inverse reinforcement learning (IRL) algorithm which provides the first provably correct method for IRL in the continuous setting, with applications to optimal control and automation
- Collaborated with other researchers to develop and test a new linear optimization algorithm which achieves state-of-the-art performance in solving linear programs with low exact rank
- Analyzed the performance of neural network architectures via spectral analysis of neural network weight matrices
- Implemented the above algorithms in Python while optimizing for numerical stability and time/memory efficiency

Sandia National Laboratories, West Lafayette, IN August 2020 – May 2021
Graduate Student Mentor
- Mentored a team of undergraduate students to develop a prototypical analytic toolkit in Python as part of a pipeline capable of providing stream-lined data analysis of experimental wargame data
- Utilized best practices while developing the analytic toolkit, including using Kanban, Agile/Scrum methodology, and Git
- Developed a novel strategy classification meta-algorithm which had 90% accuracy in synthetic experiments

Purdue University, West Lafayette, IN August 2020 – December 2020
Graduate Teaching Assistant – Introduction to Data Science (CS 242)
- Taught undergraduate students introductory data science topics such as data visualization, hypothesis testing, dimensionality reduction, data clustering, supervised learning, and data manipulation by using R, Python, SQL, and native Unix commands
- Oversaw a group of undergraduate teaching assistants to carry out course tasks such as creating assignments, grading assignments, and managing course logistics

Regenstrief Institute, Indianapolis, IN May 2018 – April 2020
Machine Learning Research Intern
- Identified and characterized a current gap in the health informatics literature on usage of machine learning in healthcare
- Presented these findings to over 400 professionals through conferences hosted by the American Medical Informatics Association (AMIA) and International Medical Informatics Association (IMIA)
- Applied natural language processing techniques (NLP) to free-text medical records to create a random forest classifier in Python capable of detecting whether a patient has tested positively for diseases tracked by the Indiana Health Department
- Created a generative adversarial neural network capable of generating statistically indistinguishable synthetic patient data which enables training of downstream models while maintaining patient privacy

AWARDS & ACCOMPLISHMENTS
- Purdue Senior Achievement Award in Mathematics – Honorary scholarship given to select math majors
- Goldwater Nominee – Nominated as one of four students from Purdue University for the national Goldwater scholarship
- Chinese Government Scholarship – Received housing and a stipend from the Chinese government for academic excellence
- Dean's List – Listed on Purdue University's Dean List all semesters of undergrad

PUBLICATIONS

(**) – Denotes alphabetical author ordering

Links to papers are on my website (www.gregorydexter.com) or Google Scholar.

Under Review/In Preparation:

(**) Bhattacharjee, R., Dexter, G., Drineas, P., Musco, C., & Ray, A. Sublinear Time Eigenvalue Approximation via Random Sampling. (Under Review)

Dexter, G., Raheel, J., Khanna, R., Honorio, J., & Drineas, P. Improved Feature Extraction for High-Dimensional Generalized Linear Models via Sketching. (In Preparation)

Published/Accepted:

Dexter, G., Chowdhury, A., Avron, H., & Drineas, P. On the Convergence of Inexact Predictor-Corrector Methods for Linear Programming. (To Appear at ICML 2022). **Selected for long presentation (2% acceptance rate)**

Chowdhury, A., **Dexter, G**., London, P., Avron, H., & Drineas, P. Faster Randomized Infeasible Interior Point Methods for Tall/Wide Linear Programs. (To Appear in JMLR)

Dexter G., Bello K., Honorio J., (2021). Inverse Reinforcement Learning in the Continuous Setting with Formal Guarantees. *Neural Information Processing Systems 2021*.

Kontopoulou E., **Dexter G.,** Wojciech S., Grama A., Drineas P., (2020). Randomized Linear Algebra Approaches to Estimate the Von Neumann Entropy of Density Matrices. *IEEE Transactions on Information Theory*.

Kasthurirathne, S. N., **Dexter, G**., & Grannis, S. J. (2021). Generative Adversarial Networks for Creating Synthetic Free-Text Medical Data: A Proposal for Collaborative Research and Re-use of Machine Learning Models. *AMIA 2021 Annual Symposium*.

Dexter G., Grannis, S. J., Dixon, B. E., Kasthurirathne, S. N., (2020). Generalization of Machine Learning Approaches to Identify Notifiable Conditions from a Statewide Health Information Exchange. *AMIA 2020 Informatics Summit*.

Dexter, G., Kasthurirathne, S. N., Dixon, B. E., Grannis, S. J., (2019). Generalization of Machine Learning Approaches to Identify Notifiable Diseases Reported from a Statewide Health Information Exchange. *MEDINFO 2019 Conference Proceedings*.

Dexter, G., Grannis, S. J., Kasthurirathne, S. N., (2019). Comparison of Free-Text Synthetic Data Produced by Three Generative Adversarial Networks for Collaborative Health Data Analytics. *AMIA 2019 Annual Symposium*.