Jacob Dineen

Last updated August 2022

Contact Information

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Research Interests

My current research area is in the interdisciplinary fields of Artificial Intelligence and CyberSecurity. Prior interests have included eXplainable Artificial Intelligence (XAI), Graph Machine Learning, and Game Theory.

Education

Arizona State University — 2022-
Ph.D. in Artificial Intelligence
Advisors: Prof. Tiffany Bao

University of Virginia — 2019-2021
M.Sc. in Computer Science (GPA: 3.96/4.00)
Advisors: Prof. Madhav Marathe

Syracuse University — 2017-2018
M.S. in Data Science (GPA: 4.00/4.00)

Grand Canyon University — 2012-2015
B.S. Finance and Economics (GPA: 3.65/4.00)

Research Experience

Research Assistant at *Arizona State University* — 2022-
- Artificial Intelligence Research

Applied Research Intern at *Capital One* — 2020-2021
- Explored aspects of organization dynamics under a reinforcement learning setting. Implemented an agent-based modeling system to study managerial incentive structures on experimental program optimization.

Research Assistant at *University of Virginia* — 2019-2020
- Worked in the Biocomplexity Institute and Initiative labs with a focus on graph dynamic systems and cooperative game theory/behavior modeling. Under the supervision of Professor Madhav Marathe.

Publications

Jacob Dineen, Donald Kridel, David Castillo, and Dan Dolk "Unified Explanations in Machine Learning Models: A Perturbation Approach". — HICSS 2023 (pending)

Dineen J., Haque A.S.M.AU., Bielskas M. (2021) Formal Methods for an Iterated Volunteer's Dilemma. In: Thomson R., Hussain M.N., Dancy C., Pyke A. (eds) Social, Cultural, and Behavioral Modeling. SBP-BRiMS 2021. — SBP-BRiMS 2021

Dineen J., Haque A.S.M.AU., Bielskas M. (2021) Reinforcement Learning for Data Poisoning on Graph Neural Networks. In: Thomson R., Hussain M.N., Dancy C., Pyke A. (eds) Social, Cultural, and Behavioral Modeling. SBP-BRiMS 2021. — SBP-BRiMS 2021

Dolk, D., Kridel, D., Dineen, J., & Castillo, D. (2020, January). Model Interpretation and Explainability towards Creating Transparency in Prediction Models. In Proceedings of the 53rd Hawaii International Conference on System Sciences. — HICSS 2020

Professional Experience

Data Scientist at *Capital One* — 2021-2022

- Productionalized key changes to the core codebase (exposed to 30mm+ active users) from feature engineering/data pipelines, unit tests, custom model architectures, and distributed training/scoring jobs over EC2 instances. Algorithmic changes led to all-time records in recorded PVV.
- *Developed sequential recommendation POCs (LSTM/Transformers) using torch, huggingface, and Nvidia's Merlin
- Co-led/co-created a twice-weekly lecture series on Deep Learning and Neural Recommendation.

* work to appear in Nvidia GTC Fall summit (2022)

Ph.D. Internships at *Capital One (2X Data Science, 1X Applied Research)* — 2020-2021

- Researched, implemented, and evaluated neural recommendation solutions under the adtech umbrella. Wrote extensible pipelines in Pyspark, joining unexplored data sources and conducting feature engineering. Provided insight and recommendation on the methodology's utilization in production beyond the scope of my summer project.

Analyst and Business Intelligence at *Real World Marketing* — 2016-2019

- Responsible for creating automated dashboards, and ad hoc reporting needs. Extracted, compiled, and integrated data sources. Leveraged analytical tools and statistical techniques to interpret data and improve processes. Multivariate analysis paired with A/B testing geared around site conversion points.

Data Scientist at *Buffalo Check LLC* — 2015-2019

- Cofounded an LLC specialized in delivering advertising solutions to the US military. Drove upwards of 2+ million in revenue as part of a two-person team.
- Directly handled client relationships, business development, ad creation and post campaign reporting. Responsible for all financial data/modeling/forecasting and interpretation. Quantitative analysis on engagement propensity.

Optimization Analyst at *Voltari* — 2012-2015

- Conducted analysis centered around first and second click ad performance. Worked closely with marketing and engineering to ensure smooth execution and successful achievement of campaign performance objectives. Analysis concerning pricing strategy/optimization. Managed point of interest (POI) database using raw SQL.

Graduate Courses

Algorithms, Machine Learning, Computer Vision, Formal Methods, Reinforcement Learning, Graph Mining, Learning Theory (Game Theory), Cloud Computing, & Research Hours	UVa
Data Analysis and Decision Making, Business Analytics, Financial Analytics, Marketing Analytics, Advanced Information Systems, Data Science, Data Warehousing, Text Mining, Scripting for Data Analysis, and Information Policy	Syracuse

Technical Skills

Language	Python, Java, R, C++, PRISM (Probabilistic symbolic model checker)
Database	MySQL, SQLite, NoSQL, MongoDB
Markup	LaTex, HTML
ML Library	PyTorch, Keras, Tensorflow, Numpy, Pandas, Dask, NLTK, Networkx, Spark, DeepGraphLibrary, HuggingFace
Other	Weka, Mallet, Anaconda Distribution, VSCode, SSIS, SSAS, Git, S3, Databricks, Legoland, Docker

Activities

Student Ambassador	Syracuse University, School of Information Studies (2018)
Math Tutor	Calculus and Linear Algebra. Chandler Gilbert Community College, Spring 2019
Independent Contracting	Scripting and Automation (2018-2020)
Research Reviewer	HICSS 2021, HICSS 2022, SBP-BRiMS 2021