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Jacob Dineen

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SUMMARY

I am second year PhD student in Computer Science with research interests in Artificial Intelligence and Machine Learning. My active research is geared toward behavior modeling and multi-agent systems under game theoretical situations. I graduated with an MSc in Computer Science (4.0) from the University of Virginia in 2021, with an M.S. in Data Science (4.0) from Syracuse University in 2018, and with a B.S. in Finance and Economics from Grand Canyon University (3.65) in 2015. I have worked in various applied research and data science roles and have a keen interest for research related to eXplainable Artificial Intelligence (XAI) and Reinforcement Learning. I am also well versed in various aspects of the fields of Deep Learning and Machine Learning.

EDUCATION

August 2019- Present	PhD Computer Science – University of Virginia (2024) *Machine Learning and Artificial Intelligence*
August 2019- May 2021	M.S. Computer Science – University of Virginia (2021) Current GPA: 4.0
January 2017 – September 2018	M.S. Data Science – Syracuse University (2018) GPA: 4.0
August 2012 – December 2015	B.S. Finance and Economics – Grand Canyon University (2015) Honors: Magna Cum Laude

PROFESSIONAL EXPERIENCE

Capital One October ’21 – Present Data Scientist	I work as part of the SiteMAB on online learnin. I have roles extending from platformization to research and development of Reinforcement Learning and Deep Reinforcement Learning algorithms for problems associated with digit content recommendation.
Capital One June ’21 – August ‘21 PhD Data Science Summer Internship	Researched, implemented, and evaluated an explainable tabular deep learnin solution to increase conversions/revenue for EASE. 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.
Capital One September ’20 – April ‘21 PhD Research Internship (C4ML)	Explored aspects of complex organizational dynamics in relation to reinforcement learning. Implemented an agent-based modeling framework tc study managerial incentive structures on experimental program optimization.
Capital One June ’20 – August ‘20 PhD Data Science Summer Internship	Researched, developed, and evaluated a Neural Collaborative Filtering approach to digital content recommendation as a member of the APEX team.
University of Virginia August ‘19 – September ‘20 Graduate Research Assistant	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.
Real World Marketing August ‘16 – May ‘19 Digital Analyst and Business Intelligence	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.
Buffalo Check LLC (Marketing) August ‘15 – August ‘19 Business Intelligence Analyst and Data Scientist	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.

Voltari December '12 – September '15 Optimization Analyst	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.

PUBLICATIONS

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.

Jacob Dineen, Donald Kridel, David Castillo, and Dan Dolk "Unified Explanations in Machine Learning Models: A Perturbation Approach".

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. Lecture Notes in Computer Science, vol 12720. Springer, Cham. https://doi.org/10.1007/978-3-030-80387-2_14 *

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. Lecture Notes in Computer Science, vol 12720. Springer, Cham. https://doi.org/10.1007/978-3-030-80387-2_8

*Best Paper Award at SBP-BRiMS 2021, featured on DeepGraphLibray's (AMZN AI) papers to read

PROJECTS

Single Image Super Resolution	Machine Learning (2019) Term Project. Rendering noisy approximation of a high-resolution image given a low-resolution counterpart.
Seam Carving	Algorithms (2019) Term Project. Content Aware Image Resizing.
Multi-Agent Systems	Formal Methods (2020) Term Project. Created a model framework, verification properties and reward analysis for an iterated Volunteer's Dilemma Game.
Recommender Systems	Course project in Graph Mining (2020) focused on Neural CF methods and knowledge base joint learning for integration of semantic item side information.
Reinforcement Learning	(2020) Created an experimental framework for poisoning graph neural network classifiers via RL.
Cloud Computing	(2021) Implemented a paper involving distributed deep learning training using synthetic gradients and tested model parallelism across docker devices.
Portfolio Optimization	(2019) Created interactive financial dashboards using Rshiny and flexdashboard for portfolio optimization and forecasts.
Data Warehousing	(2019) Created data warehouses (star schemas), ETL pipelines, and OLAP cubes using SSIS and SSAS.
Computer Vision	(2020) Worked on a project involving automated lipreading.

GRADUATE LEVEL COURSES

University of Virginia	Algorithms, Machine Learning, Computer Vision, Formal Methods, Reinforcement Learning, Graph Mining, Learning Theory (Game Theory), Cloud Computing, and Research Hours.
Syracuse University	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

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