Jacob Dineen

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Contact Information

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Research Interests

My current research area is in Artificial Intelligence, particularly LLMs. Prior interests have included eXplainable Artificial Intelligence (XAI), Graph Machine Learning, and Game Theory.

Education

Arizona State University — *Present*
Ph.D. in Artificial Intelligence
Advisor: Prof. Ben Zhou

University of Virginia — *2019-2021*
M.Sc. in Computer Science (GPA: 3.96/4.00)
Advisor: 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

Research Assistant at *Arizona State University* — *Present*
- 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 the *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”. In Proceedings of the 56th Hawaii International Conference on System Sciences. — HICSS 2023

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

Machine Learning Engineer @ *Spring Oaks Capital* *'22-'23*

- Developed and deployed etl and modeling pipelines via airflow + k8s for SOC's daily automated text/call efforts & offer generation (ranking recommendation + OR-Tools integration).
- CICD: unit tests, automated builds, automated deployment via AWS ECR & Codebuild + git actions.
- Contributed to building cloud infrastructure for core tech stack from containerization to resource provisioning & dev environment.
- Prepared Sigma dashboards monitoring online performance metrics for key stakeholders.

Data Scientist @ *Capital One* *'21–'22*

- 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 EKS clusters. Algorithmic changes led to records in value generated.
- Developed sequential recommendation POCs using torch, huggingface, and Nvidia's Merlin / Transformers4Rec which appeared in the Nvidia GTC Fall summit (2022).
- Co-led/co-created a twice-weekly lecture series on Deep Learning and Neural Recommendation.

Ph.D. Internships @ *Capital One (2X Data Science, 1X Applied Research)* *'20-'21*

- Researched, implemented, and evaluated neural recommendation solutions for adtech problems.
- Wrote extensible pipelines in Pyspark, leveraging unexplored data sources.
- Provided insight and recommendations on the methodology's utilization in production beyond the scope of my summer project.
- Worked on research involving agent-based modeling and Reinforcement learning as part of C4ML.

Analyst and Business Intelligence @ *Real World Marketing* *'16-'19*

- 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 @ *Buffalo Check LLC* *'15-'19*

- 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.
- Responsible for all financial data/modeling/forecasting and interpretation. Quantitative analysis on engagement propensity.

Optimization Analyst @ *Voltari* *'12-'15*

- Conducted analysis centered around first and second-click ad performance. Analysis concerning pricing strategy/optimization. Managed point of interest (POI) database via SQL.

Grad Courses

Computer Systems Security, Software Security, Planning and Learning Methods in AI, Algorithms — *ASU*

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*

Skills

OS	Linux (Ubuntu), MacOS, Windows

	Language	Python, Rust, x86-64, Java, JS, R, C, C++, PRISM, Bash, Vue, React
	Database	MySQL, SQLite, NoSQL, MongoDB, Snowflake, Redshift, Postgres, Redis
	Markup	LaTex, HTML
	ML Library	PyTorch, Keras, Tensorflow, Jax, Numpy, Pandas, Polars, Dask, NLTK, Networkx, SparkML, SnowparkML, DeepGraphLibrary, HuggingFace, Botorch, Torch Geometric, Burn
	Other	Weka, Mallet, Conda/Mamba, VSCode, Git, Databricks, Docker, Snowflake Snowpark, Airflow, AWS (ECR/S3/EKS/Codebuild), Kubernetes, Helm, Sigma, Sagemaker, OR-Tools

Misc.

	Tutor/TA	CGCC Calculus and Linear Algebra Tutor (‘19) CSE365 (pwncollege) TA
	Conference Reviewer	HICSS (‘21 & ‘22), SBP-BRiMS ‘21
	Cyber Security (Certificate)	Pwn.college green belt (user: jdin) (‘22). Reverse engineering, binary exploitation, dynamic and static analysis

References

	Paul Hurlocker	CTO @ Spring Oaks Capital LLC
	David Der	Sr. Engineering Mngr. @ Spring Oaks Capital LLC
	David Weiss	Sr. Engineering Mngr. @ Spring Oaks Capital LLC
	Austin Cathon	Sr. AI & DS Mngr. @ Spring Oaks Capital LLC
	Scott Golder	Sr. Director Data Science @ Capital One
	Kalaland Mishra	Sr. Mngr. Data Science @ Capital One
	Kerry Levenberg	Mngr. Data Science @ Capital One
	Hailey Nguyen	Machine Learning Engineer @ Meta
	David Castillo	CTO @ Voltari
	Don Kridel	DS/AI Consultant @ Voltari
	Shawn Adams	CEO @ Buffalo Check LLC