Patrick M. Timons

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Education

Artificial Intelligence And Decision Making — *Bachelor of Science* Aug 2021 - May 2025
Massachusetts Institute of Technology GPA: 4.7/5.0
Minor: Mathematics; *Concentration*: Economics
Relevant Coursework: Algorithms II, Algorithms I, Mathematics for Comp Sci, Probability, Linear Algebra and Optimization, Deep Learning II, Deep Learning I, Representation, Inference, and Reasoning in AI, Machine Learning I, Networks, Microeconomics, Computation Structures, Low-Level Programming, Quantitative NLP, Computer Vision, Computer Programming, Linguistics, Biology, Chemistry
Planned Fall 2024: Statistics, Machine Learning II (Graduate), Advanced Molecular Biology (Graduate), Information Policy

Work Experience

Amazon Web Services — *SDE Intern* Jun 2024 - present
- Designed and implemented a data pipeline for $\sim 20,000$ enterprise AWS customers's billing data
- Used Statistics and Machine Learning to forecast the billing of enterprise AWS customers
- Created an API Gateway to facilitate access to the billing datasets, model predictions, and custom graphical representations
- Used Infastructure as Code (IaC) to professionally create and deploy the micro-service and to manage interaction with other components of the AWS cloud ecosystem such as S3, Athena, Glue, and SageMaker

Pier 88 Investment Partners — *Research Analyst Intern* May 2021 - Aug 2021
- Researched the decentralized finance space ("Defi") and developed stable-coin yield farming strategy
- Interviewed executive teams from public and private companies as part of investment due diligence
- Performed technical due diligence on early-stage AI startup for venture fund

Technical Projects

Improving Deep Learning Based Molecular Fingerprints Through Informed Resampling — Oct 2023 - Dec 2023
- Worked in small team to research improvements to pretraining methods for transformer-based molecular encoders
- Created custom RoBERTa model through the use of transformers and bert-loves-chemistry (ChemBERTa) software packages with 9.1 percent improvement in Spearman's rank correlation coefficient on downstream tasks compared to the base model
- Coauthored 5-page ACL-submission-style write-up about project and results

Recovering Latent Variables with Variational Autoencoders despite Training Bias — Nov 2023 - Dec 2023
- Researched how beta-regularization robustifies VAEs to training bias when attempting to recover latent variables
- Trained models with PyTorch Lightning and used scientific computing libraries to generate training data and visualize results

Extracurricular Activities and Honors

MIT Men's Lacrosse — *Team Member* Aug 2021 - present
- Voted Most Improved for 2023 season, NEWMAC All-Academic Award (2023), 2022 NEWMAC Champion

AI@MIT — *Club Member* Sep 2022 - May 2023
- Worked in a team of 3 to build a document summarizer and present at the AIM Labs Demo Day

Global Teaching Labs — *Applied Math Teacher* Jan 2024 - Jan 2024
- Teaching selected topics in Operations Research with a focus on Bayesian Inference to high school students in Cremona, Italy

Skills

Programming (Python, Java, TypeScript, C++, Julia, Bash), **Databases** (SQL, PySpark, AWS Data Catalog), **Programming Paradigms & Design Patterns** (Multithreading, Object-Oriented-Programming, Dependency Injection, Data Structures & Algorithms), **Dev Ops** (Source Control, Build Tools, Dependency Management, CI/CD), **Libraries & Ecosystems** (AWS, SageMaker, PyTorch, Pytorch Lightning, Numpy, Pandas, SciKit Learn, Transformers, Transformers Reinforcement Library, Matplotlib, Plotly, Dash), **Natural Language Processing**, **Machine Learning** (Time-Series, Data Visualization, High Performance Computing, Slurm Workload Manager, Web Scraping), Researching Skills, Technical Writing