Brian Lee

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EDUCATION

Virginia Tech — **Blacksburg, Virginia**
B.S. in Computational Modeling and Data Analytics — *Aug. 2019 - May 2023*
Minors in Computer Science and Mathematics — GPA: **3.485**

EXPERIENCE

Research Intern, Virginia Tech National Security Institute — **Arlington, Virginia**, *May 2022 - Jul. 2022*

- Constructed data pipeline tools that scrape and filter raw images from Instagram by hashtag to assemble training datasets of high-quality images without text or human faces.
- Reduced average FID score by 22% when leveraging transfer learning to train pretrained StyleGAN3 generative adversarial networks on new limited datasets.
- Trained StyleGAN3 models that synthesize images resembling examples from a transfer learning dataset.
- Wrote an article on research results approved for the *ITEA Journal of Test and Evaluation*, June 2023 issue.

Research Assistant, Virginia Tech National Security Institute — **Blacksburg, Virginia**, *Sep. 2022 - May 2023*

- Constructed visualizations for a data explorer tool that illustrate model performance against combinations of feature interactions covered in the training dataset.
- Preprocessed JSON files of malware datasets for model training functionality in the data explorer tool.

PROJECTS

Comparing Latent Representations of Protein Sequencing Models, CMDA Capstone *2022*

- Trained principal component analysis models to transform up to 1,900-dimensional latent outputs of protein sequencing models into lower-dimensional spaces.
- Trained a Gaussian Mixture Model to perform clustering on protein sequence representations.
- Measured similarity of protein sequencing model outputs through set difference comparisons across clusters of proteins visualized on heatmaps, suggesting differences in learned representations.

Game of Life Simulation *2021*

- Implemented large-scale simulations of John Conway's *Game of Life* using grids up to 10 billion cells.
- Parallelized computation involving 128 tasks of work across eight CPU nodes through Message Passing Interface (MPI), achieving 20% speedup on strong scalability studies across over 20 simulations.

SKILLS

Languages: Python, Java, R, C, MATLAB, SQL
Software: Pandas, Matplotlib, NumPy, RStudio, PyTorch, Git, Minitab, Tableau

LEADERSHIP

President, Computational Modeling and Data Analytics Club *2022*