Paul Morris

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Education

2017 – 2022 **Ph.D. Complex Systems and Brain Sciences, Florida Atlantic University**
Thesis title: *Computation in Self-Attention Networks*

2016 – 2021 **M.S. Computer Science, Florida Atlantic University**

2012 – 2016 **B.S. Computer Science, Florida Atlantic University**

Employment History

April 2023 – Present **Data Scientist** Corteva Agriscience
Lead developer of a neural network training and inference Python package for training large-context transformer neural networks on distributed cloud clusters. Developed a pipeline for continuous model finetuning on genomic data with CI/CD pipelines. Implemented improvements to model performance and inference speed that reduced GPU-hours to reach peak accuracy by 64%. Faciliated communication between machine learning researchers and genomic data science teams to deploy the software in support of diverse research efforts.

2019 – April 2023 **Natural Language Processing Engineer** GoGig
Designed and lead the end-to-end development and continuous improvement of software combining machine learning and psychology research. Designed systems to reduce discriminatory biases typically amplified by algorithms to ensure fairness for thousands of end users.

2017 – 2020 **COO / Machine Learning Engineer** MedBios
Developed predictive models for early disease diagnosis, molecular interactions, and molecule design. Managed operations, grant writing, and business development at an early-stage startup. Integrated deep learning into MedBios' platform.

2016 – 2017 **Software Developer** CellAntenna Wireless
Built a Java-based Android application to control Software-Defined Radios (SDRs) for commercial use. Worked with customers to add functionality supporting new use cases.

Selected Research Publications

Journal Articles

1. Barenholtz, E., Krotulski, A. J., **Morris**, **P.**, Fitzgerald, N. D., Le, A., Papsun, D. M., … Cottler, L. B. et al. (2021). Online surveillance of novel psychoactive substances (nps): Monitoring reddit discussions as a predictor of increased nps-related exposures. *International Journal of Drug Policy*, *98*, 103393.

2. **Morris**, **P.**, St. Clair, R., Hahn, W. E., & Barenholtz, E. (2020). Predicting binding from screening assays with transformer network embeddings. *Journal of Chemical Information and Modeling*, *60*(9), 4191–4199.

3. Castaneda, G., **Morris**, **P.**, & Khoshgoftaar, T. M. (2019). Evaluation of maxout activations in deep learning across several big data domains. *Journal of Big Data*, *6*(1), 1–35.

Conference Proceedings

1. Clark, E., Hahn, W., St Clair, R., **Morris**, **P.**, & Teti, M. (2019). Advances in deep learning and their applied utility toward chemical informatics & drug discovery. In *Abstracts of papers of the american chemical society* (Vol. 257). AMER CHEMICAL SOC 1155 16TH ST, NW, WASHINGTON, DC 20036 USA.
2. **Morris**, **P.**, St Clair, R., Teti, M., Clark, E., & Hahn, W. (2019). Virtual high-throughput screening: A combined deep-learning approach. In *Abstracts of papers of the american chemical society* (Vol. 257). AMER CHEMICAL SOC 1155 16TH ST, NW, WASHINGTON, DC 20036 USA.
3. **Morris**, **P.**, DaSilva, Y., Clark, E., Hahn, W. E., & Barenholtz, E. (2018). Convolutional neural networks for predicting molecular binding affinity to hiv-1 proteins. In *Proceedings of the 2018 acm international conference on bioinformatics, computational biology, and health informatics* (pp. 220–225).

Talks and Posters

1. **Morris**, **P.** (2021). Clip art: Digital haruspicy for internet studies. Florida Atlantic University.
2. Wilson, K., Augustin, R., **Morris**, **P.**, Clark, E., Hahn, W., & Barenholtz, E. (2018). Deep learning guided transcriptome sequence analysis of primary tumors for differentiation and diagnosis of multiple cancers. Poster presented at the GPU Technology Conference. Retrieved from http://dx.doi.org/10.13140/RG.2.2.26273.71521

Skills

Coding	Python, R, MATLAB, C#, Java, C++
Machine Learning	PyTorch, Transformers, Ray, JAX, NumPy, Tensorflow, Dask, Pandas, OpenCV, SpaCy
Frameworks	Kubernetes, Docker, Helm, Git, GitLab, Slurm, FastAPI, Scrapy, PyDantic
Skills	Machine learning research, machine learning engineering, data visualization, computational chemistry, dynamical systems modeling, teaching, web scraping, data science consultation, data science with low/no labeled data, end-to-end development and deployment of appropriate machine learning techniques to new fields.
Interests	Generative/AI art, music, hiking, fractals, squirrels.

Certifications

2019 **Big Data Analytics Certificate**. Awarded by Florida Atlantic University.