Matthew Almeida

L: linkedin.com/in/matthew-almeida   G: github.com/MatthewAlmeida

SUMMARY

Graduating Ph.D. in Computer Science with a focus in applied machine learning seeking a role in Data Science / Machine Learning Engineering. Specializes in deep neural networks in Python but has breadth of knowledge of data science techniques from work across a variety of problem domains in industry and academia over the last 15 years. Returned to Ph.D. study following ten years as a catastrophe risk analyst quantifying natural disaster risk to commercial properties across the world in a challenging live data environment.

EXPERIENCE

Ph.D. Candidate, Research Assistant   *University of Massachusetts, Boston*   Sept 2016 - Present

Worked as a Ph.D. Candidate / Researcher in applied machine learning at the Knowledge Discovery Lab in UMB's Computer Science department, focusing on modeling real-world datasets with deep neural networks in Python.

- Researched human activity recognition with wearable accelerometers (supervised classification) from several perspectives, including: labeling uncertainty, ablation studies with respect to number of sensors / handedness of individuals, effects of subject-specific distributional differences on modeling, and individual algorithmic fairness.
- Other research projects have included fall risk modeling in older adults, spatio-temporal crime forecasting, music genre recognition, and stream flow prediction for river flooding.
- Supervised undergraduate lab assistants and mentored junior Ph.D. students in data science methodology and programming best practice.

Ph.D. Intern, Data Science   *Indigo Ag*   June – August 2019

Joined Indigo Ag's GeoInnovation Data Science team as Ph.D. Intern, Data Science for the summer of 2019.

- Worked with Indigo's data science team to design, implement, train, and evaluate an irrigation status model for cropland in the continental US, trained on multispectral satellite imagery (to 30m resolution) and associated weather data.
- Used Python (GeoPandas), AWS, SQL, and XGBoost.
- Results published as an abstract at AGU 2019: https://bit.ly/2xsPyvj. Slide deck available at LinkedIn URL above.

AVP - Catastrophe Modeling   *Allied World Assurance Company*   2005 - 2016

From completion of undergrad degree until 2016, worked as an Analyst in the Catastrophe Risk Modeling department quantifying the company's risk exposure to (primarily) hurricanes and earthquakes. Moved up in the company several times, finishing as AVP – Catastrophe Modeling (2014-2016). Worked as a Senior Catastrophe Analyst from 2010-2014 and as Catastrophe Analyst from 2005-2010.

- Assisted the decision-making of corporate and underwriting staff by providing statistical risk metrics
- Responsible (with team) for populating and maintaining data store (MS SQL) of direct property building data, for use in risk modeling and accumulation management.
- Designed, developed, and maintained internal tools to automate catastrophe department workflow and reporting using C# and SQL.
- Identified and remedied inefficiencies in existing analyst workflows and screened future changes to procedures for potential issues. Suggested alternatives and coded solutions.
- Was personally responsible for the intake and processing of another multinational property insurer's in force policy data following a major acquisition.

LANGUAGES AND PLATFORMS

Ph.D. Candidate, Research Assistant - Python, Numpy, Pandas, Scikit-learn, Tensorflow, Pytorch, Git, Docker

Implemented UMass Boston research projects in Python on the lab's Linux-based 8-GPU server, containerized with Docker.

Ph.D. Intern, Data Science – Python, Pandas, Geopandas, AWS, Snowflake SQL, Scikit-learn, Matplotlib

Implemented and trained model on AWS EC2 on large-scale multispectral image data collected from the Harmonized Landsat Sentinel-2 (HLS) product.

Catastrophe Analyst - SQL, C#, Excel

Development at Allied World included writing queries and stored procedures in SQL and creating C# and Excel-based tools for use by our analyst team to automate repetitive data tasks, calculate required metrics, or assist in data cleaning.

EDUCATION

Ph.D, Applied Machine Learning	UMass Boston, 2016-2021
MS, Computer Science	UMass Boston, Awarded 2020
BS, double-major in Computer Science and Mathematics	UMass Amherst, Awarded 2005

PUBLICATIONS

M. Almeida, Y. Zhuang, W. Ding, P. Flynn, S. Islam, P. Chen, "Widening the Time Horizon: Predicting the Long-Term Behavior of Chaotic Systems with Error-Trajectory Tracing and Horizon Forcing," Submitted to: *IEEE Transactions on Pattern Analysis and Machine Intelligence* (TPAMI) [Under Revision]

M. Almeida, Y. Zhuang, W. Ding, S. Crouter, P. Chen, "Mitigating Class-Boundary Label Uncertainty to Reduce Both Model Bias and Variance," *ACM Transactions on Knowledge Discovery from Data (TKDD)* 15(2), March 2021

E. Baldo, M. Almeida, "Mapping Irrigated Croplands Using HLS Time Series Data," presented at 100th American Geophyisical Union Fall Meeting, San Francisco, CA, 2019.

Y. Zhuang, M. Almeida, M. Morabito, W. Ding, "Crime Hot Spot Forecasting: A Recurrent model with Spatial and Temporal Information," In Proc. IEEE International Conference on Big Knowledge, August 9 -10, 2017, Heifei, China.

ADDITIONAL ACADEMIC SERVICE

Served as peer reviewer for top conferences and journals in Machine Learning and Artificial Intelligence, including NeurIPS, AAAI, KDD, ICDM, TKDD, CIKM, and others.