Yong Zhuang

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SUMMARY

Senior Machine Learning Engineer / Ph.D. in Computer Science and applied machine learning. Highly adept at feature selection, deep learning, and time series forecasting, but has a breadth of knowledge of data science techniques from work across various problem domains in industry and academia over the last seven years. Have eight years of software development experience leading a team of five before the Ph.D. study.

SKILLS

Languages : Python, Java, ASP.NET, C#, PHP, JavaScript, HTML/CSS, SQL
Machine Learning Packages : Tensorflow, Keras, Pytorch, Matplotlib, Pandas, Numpy, scikit-learn, seaborn
Database : MySQL, Microsoft SQL Server, Access, Oracle
ArcGIS : Map, Server, SDE and Desktop
Developer tools : Git, Docker, VS Code, Visual Studio, Eclipse
Advanced Skills : Design Patterns, MVC, Jquery, AJAX

EXPERIENCE

Senior Machine Learning Engineer Aug. 2022 - Mar. 2023
Constant Contact Waltham, MA, U.S.
Estimate customer lifetime value to help the marketing team develop marketing strategies.

- Conduct RFM analysis on eCommerce data to estimate future purchases and average purchase value of customers.
- Estimate customer lifetime value using a Gamma-Gamma model on RFM analysis result.
- Segment customers using CLV to tailor accurate marketing strategies.

Ph.D. Candidate, Research Assistant, Data Scientist Dec. 2014 - Jul. 2022
Knowledge Discovery Lab Boston, MA, U.S.
Worked as a Ph.D. Candidate / Researcher in applied machine learning at the Knowledge Discovery Lab in UMBs Computer Science department, focusing on modeling real-world datasets using feature selection and deep neural networks in Python. Major work including:

- Design/implement/verify a multi-Markov-blankets-based ensemble model “Galaxy" to identify precursors to heavy precipitation event clusters. “Galaxy" identified the cold surges along the coast of Asia as an essential precursor to the surface weather over the United States, which was confirmed by climate experts.
- Proposed the Lyapunov Horizon loss to measure how the error divergence of a forecasting sequence evolved in a chaotic system and optimized it using a new regime called "Horizon Forcing" on a recurrent "tower" architecture, "Error Trajectory Tracing." This improves the predictive range of sequences in chaotic systems by more than 20%.
- Integrated Convolutional Neural Network and Recurrent Neural Network to capture latent space-time features for predicting crime hotspots, which improved F1-score by 21%.
- Supervised undergraduate lab assistants and mentored junior Ph.D. students in data science methodology and programming best practice.

Machine Learning Researcher Jun. 2019 - Nov. 2019
Radial Analytics Concord, MA, U.S.
Design a machine learning system to help hospital systems and physician networks provide patients with more effective care to meet their individual needs.

- Developed a machine learning pipeline that selects the most valuable features related to patients’ health status using natural language processing (NLP) and causal-based feature selection.
- Built deep neural networks to identify patient candidates in different health levels with an average precision improvement of 17%.
- Determine the best predictive model for the given problem using feature selection and model selection.

Lead Software Engineer Sep. 2005 - Mar. 2013

Triexcel Co., Ltd. (2005 - 2011) & Huiyin Science and Technology (2011 - 2013) Anshan, Liaoning, China

- Led both front-focused and backend-focused teams to develop a GIS-based Geological Hazard Management System (GHMS) for data collection, data synchronism, risk scoring, and investigation planning.
- Led both front-focused and backend-focused teams to develop an after-sales service management platform that streamlined the after-sale service process, improving efficiency and customer satisfaction.
- Spearheaded the development of a secure remote solution that enabled web-based remote control and system updates for Bank of Anshan terminals.

PUBLICATIONS

Zhuang, Y., Almeida, M., Ding, W., Flynn P., Islam, S., Li, Z., and Chen P. . “Horizon Forcing: Improving the Recurrent Forecasting of Chaotic Systems." *Transactions on Intelligent Systems and Technology (Under Review).*

Zhuang, Y., Almeida, M., Ding, W., Flynn P., Islam, S., and Chen P. (2022, November). “Widening the Time Horizon: Predicting the Long-Term Behavior of Chaotic Systems." *In 2022 IEEE International Conference on Data Mining (ICDM) (pp. 833-842). IEEE.*

Almeida, M., Zhuang, Y., Ding, W., Crouter, S. E., and Chen, P. (2021). “Mitigating class-boundary label uncertainty to reduce both model bias and variance." *ACM Transactions on Knowledge Discovery from Data (TKDD), 15(2), 1-18.*

Zhuang, Y., Small, D. L., Shu, X., Yu, K., Islam, S., and Ding, W. (2018, November). “Galaxy: Towards Scalable and Interpretable Explanation on High-Dimensional and Spatio-Temporal Correlated Climate Data." *In 2018 IEEE International Conference on Big Knowledge (ICBK) (pp. 146-153). IEEE.*

Zhuang, Y., Almeida, M., Morabito, M., and Ding, W. (2017, August). “Crime hot spot forecasting: A recurrent model with spatial and temporal information." *In 2017 IEEE International Conference on Big Knowledge (ICBK) (pp. 143-150). IEEE.*

Zhuang, Y., Yu, K., Wang, D., and Ding, W. (2016, April). “An evaluation of big data analytics in feature selection for long-lead extreme floods forecasting." *In 2016 IEEE 13th International Conference on Networking, Sensing, and Control (ICNSC) (pp. 1-6). IEEE.*

Zhuang, Y., and Ding, W. (2016, September). “Long-lead prediction of extreme precipitation cluster via a spatiotemporal convolutional neural network." *In Proceedings of the 6th International Workshop on Climate Informatics: CI.*

EDUCATION

University of Massachusetts Boston Sep. 2016 - Dec. 2021

Ph.D, Applied Machine Learning, GPA 3.906 Boston, MA, U.S.

University of Massachusetts Boston Sep. 2014 - Jun. 2016

MS, Computer Science, GPA 3.923 Boston, MA, U.S.

Harbin Engineering University Sep. 2001 - Jul. 2005

BE, Computer Science, GPA 3.68 Harbin, Heilongjiang, China

HONORS and AWARDS

Oracle Doctoral Research Fellowship Award Jun. 2016, 2018

The Collage of Science and Mathematics

The Randall Gates Malbone Fellowship May. 2019

The Collage of Science and Mathematics

National Science Foundation (NSF) Graduate Research Internship Jun. 2019

National Science Foundation