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Last Updates: March 2022

HIGHLIGHTS

I am a machine learning engineer and research scientist with 7+ years of ML research experience and 3+ years of industry-level engineering experience. My research is on NLP, graph neural networks and reinforcement learning. I have hands-on, industry-level experience with (1) fraud detection and large payment/credit risk system, (2) news/feeds ranking and relevance (3) robotics and reinforcement learning, (4) heterogeneous time series and (5) knowledge graph and large social network inference. Worked across fin-tech, tech, med-tech industries and academia, I am particularly confident and experienced in (a) spearheading cross-functional collaboration, (b) communicating with non-experts, (c) mentoring junior colleagues and (d) leading end-to-end ML work.

SKILLS

Languages	Python, Java, Scala, R;
Machine Learning	PyTorch, RLib, xgBoost, caffè, Tensorflow, OpenCV, CTNK, EMR, H2O;
NLP	Transformer (XLM-ROBERT, Transformer4Rec), BERT, GPT-2, SpaCy, TextBlob, HuggingFace;
Database	DynamoDB, Cassandra, Redis, RDS, Aurora, BigTable, Postgre SQL, MongoDB;
Engineering	Spark, Docker, Kubernetes, Flink, ZooKeeper, Airflow, ONNX, DvC, Hadoop, Weights & Biases;
AWS	S3, EC2, EMR, Lambda, Cloudwatch Logs, Batch, MQ, Sagemaker, Eventbridge;
Miscellaneous	Git, Bash, Jira, Markdown, \LaTeX , ArcGIS

EXPERIENCE

Senior Machine Learning Engineer **03/2022 — Present**
SmartNews, Inc. *San Francisco, CA*

- Led the effort of Local Ranking Problems by building a locality density ranking services to discover users' locations of interests;
- Led the closed-domain question-answering project

Senior Machine Learning Engineer **06/2021 — 03/2022**
Auris Health, Inc. *Santa Clara, CA*

- *As an individual contributor:* Designed novel noise reduction and spatial point cloud clustering methodologies from robotic surgeon telemetry data for anatomical modeling; Designed offline RL framework with robotic arm-surgical target mapping approaches; Contributed to the data pipelines/ETLs from raw surgery data to ground truth validation;
- *As a workstream lead:* Designed and prototyped the ML Lifecycle monitoring platform; Re-designed technical assessment to external candidates; mentored junior engineer and successfully converted him to full-time hire

Associate 2 (Sr. Assoc.) AI/ML **08/2020 — 06/2021**
JP Morgan Chase & Co. *New York, NY*

- Scaled up the Transaction Flow Forecasting workflow and the attrition risk models with a multi-segment anomaly detection (latency reduced by >80%);
- Fraud detection of large client-end financial data and Hosted the Sequence Model Reading Group on new research and engineering developments on time series data

Applied Scientist Intern **06/2019 — 09/2019**
Microsoft Corporation *Redmond, WA*

- Developed link prediction models for complex user communication networks using auxiliary network and deep graph network methods to boost user engagement with new product features;
- Built recommendation system of next user behavior with Transformer and visualization interface, increased accuracy by 20+ %

Applied Scientist Intern **08/2018 — 12/2018**
Amazon.com, Inc. *Redmond, WA*

- Developed a multi-level representation learning method on sentiment classification tasks with conversation texts and applied the model on Customer Feedback Evaluation data;
- Designed large-scale merchandise fraud detection models based on merchant feedback data, f-1 score increased by 1X%

Data Scientist Intern **06/2018 — 08/2018**
Deloitte Services LP. *Seattle, WA*

- Designed end-to-end resume recommendation System, Taught a social network analysis workshop, and developed a causal inference project on human resource success metrics

EDUCATION

University of Washington Ph.D. Student, Information Retrieval, Spatial Time Series, Computational Social Sciences, Reinforcement Learning <i>Dropped the program and left with M.S. in Year 4 to pursue industry opportunities</i> Clarence and Schrag Endowed Ph.D. Fellowship	Seattle, WA Left Year 4 ¹ 2016 2016 — 2020
Penn State University B.A. Philosophy <i>Emmm... I am actually quintuple major (5 degrees received), ask me for more details.</i>	University Park, PA 2012 — 2016

RESEARCH AREAS

Applied Reinforcement Learning
Large Knowledge Graph Inference
Natural Language Understanding and Interactive Text Processing
Spatial Time Series

LAB ROTATIONS

Research Affiliate, Yu Li Lab, Chinese University of Hong Kong	2020 — 2022
Research Assistant at Dept. of Computer Science, Penn State University	2020
Research Assistant at Fred Hutchinson Research Center	2019 — 2020
Research Assistant at Center of Statistics for Social Sciences at University of Washington	2018
Research Assistant at Center for Studies in Demography and Ecology at University of Washington	2017

PUBLICATIONS

1. Z. Dong et al., "Deep Reinforcement Learning for Multi-agent Robotic Collaborations via Asynchronous Off-Policy Updates Submitted to *Thirty-ninth International Conference on Robotics and Automation (ICRA 2022)*
2. Z. Dong et al., "Maximum Entropy Inverse Reinforcement Learning Identifying Multiple Layers of Human Interactions" Submitted to *Thirty-ninth International Conference on Machine Learning (ICML 2022)*
3. Q. Yu, **Z. Dong**, X.Fan, Z. Li, Y. Li, "HMD-AMP: Protein Language-Powered Hierarchical Multi-label Deep Forest for Annotating Antimicrobial Peptides" Submitted to: *26th Int. Conf. on Research in Computational Mol. Biology (ReCOMB 2022)* [[Preprint](#)]
4. **Z. Dong**, Y. Wang, "A Multi-Modal Learning Framework for Classical Music Auto-completion and Genre Identification" Manuscript Submitted to *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2021)*.
5. Z. Dong "Aspect-Aware Conversation Sentiment Models" Manuscript Submitted to *2021 Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL 2021)*. [[Preprint](#)]
6. N. Kenworthy, **Z. Dong**, A. Montgomery, E. Fuller, L. Berliner (2020) "A cross-sectional study of social inequities in medical crowdfunding campaigns in the United States" Accepted to: *PLoS ONE* [[Preprint](#)].
7. Z. Dong, A. Birjal, X. Yan "Solving Complex Network Link Prediction Problems using Auxiliary Graphs" Working Paper
8. T. Wu, **Z. Dong**, S. Song and M. Zhang (2020) "Interactive Attention Model Explorer for NLP Tasks with Unbalanced Data Sizes" Accepted: *The 13th IEEE Pacific Visualization Symposium (PacificVis 2020)* [[Full Paper](#)].
9. Z. Dong, A. Dobra and Y. Chen (2019) "A statistical framework for measuring the temporal stability of human mobility patterns". Accepted to: *Journal of Applied Statistics* [[Full Paper](#)].
10. Z.Dong (2017). "Estimation and Extrapolation of Spatial Trends in Mortality Data using Bayesian APC Modeling". Accepted to *International Conference on Population Geography. (ICPG 2017)* [[Program Notes](#)]
11. Z.Dong (2016). "Theorizing Urban Neighborhoods: Mapping the Interneighborhood and Intraneighborhood Networks and Criminogenic Factors on Street Crime Victimization". Accepted to *American Society of Criminology Annual Meeting*.