Yunlong Jiao

Machine Learning Scientist

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ABOUT ME

I am currently a machine learning scientist at Amazon Alexa, working on building AI assistant that is able to replicate human intelligence. I am passionate about applied AI research that drives tangible impact for products and services. With over 5 years of post-PhD experience in the field of ML/AI, I possess strong skills in model development and performance evaluation, and am proficient in Python and deep learning frameworks. While successfully incubating and delivering multiple projects at Amazon, I am involved in all phases of the development cycle – from building proof of concept to delivering minimum viable products and scaling up production. I have experience in supervising master's theses and research internships, as well as coaching and mentoring junior team members.

EDUCATION

2013 – 2017 **Doctor of Philosophy**
Centre for Computational Biology
Paris Sciences et Lettres – PSL Research University, Paris, France

2012 – 2013 **Master of Science** (MENTION TRÈS BIEN)
Department of Mathematics
University of Paris-Saclay, Orsay, France

2008 – 2012 **Bachelor of Science** (FIRST CLASS HONOURS)
Department of Mathematics
University of Science & Technology of China, Hefei, China

WORK EXPERIENCE

Machine Learning Scientist
CURRENT, FROM NOV 2019

Amazon, London, UK

- **Key Skills:** Natural Language Processing, Large Language Models, Deep Generative Models, Neural Text-to-Speech
- At Alexa Shopping Science team (from Mar 2021), my current responsibilities are:
  1) Leading research on bias mitigation technologies in NLP to enhance fairness while preserving user privacy;
  2) Building and deploying ML solutions in creating unified user experiences for Alexa Shopping across different devices;
  3) Working in cross-functional teams, overseeing prototype to production, and communicating results with stakeholders;
  4) Supervising research internships and coaching and mentoring junior team members.
- At Alexa Text-to-Speech Research team (Nov 2019 – Feb 2021), I had:
  1) Proposed and delivered a deep generative model for 'universal' speech synthesis, which can be used regardless of speaker identity or language and can therefore massively save cost in TTS production and speed up launch of new TTS voices;
  2) Collaborated with engineers to scale up Alexa TTS production and launch new voices in multiple regions and countries.

Postdoctoral Research Scientist
NOV 2017 – OCT 2019

University of Oxford, Oxford, UK

- **Key Skills:** Gaussian Processes, Time Series Forecasting, Multi-modality
- My responsibilities included:
  1) Leading Oxford research in a multi-organizational project (involving organizations in the UK and EU) and developing novel methods for longitudinal modelling of complex disease using multi-modal data integration;
  2) Supervising master's theses in the Department of Statistics.

Doctoral Researcher
SEP 2013 – SEP 2017

PSL Research University, Paris, France

- **Key Skills:** Kernel Methods, Representation Learning, Graph Learning, Sparsity Regularisation
- My PhD work contributed novel ML methods and advanced scientific discoveries in biology and cancer research:

1) My research focus was kernel methods and representation learning of non-tabular data, such as rank data and graphs.
2) My research outputs significantly improved prediction of breast cancer survival using genetic data, and guided interpretable biomarker discovery with the help of biological networks.
3) I had published multiple first-authored papers in top ML conferences and journals (3 at ICML and 1 at IEEE TPAMI) and developed open-source toolkits.

■ A few colleagues and I participated, and finally placed 2nd, in the DREAM Toxicogenetics Challenge, a Kaggle-style community competition in data science that is aimed to advance computational methods in biology.

Data Scientist Intern APR 2015 – JUN 2015
Roche Diagnostics GmbH, Penzberg, Germany

■ **Key Skills:** Information Extraction, Feature Engineering, Large-Scale Unstructured Database
■ During the internship, I had:

1) Proposed a data pipeline to process large-scale unstructured machinery performance data and built a model to predict failure state for automated immunoassay analysers;
2) Demonstrated how maintenance efficiency can be greatly improved for one of Roche's core hardware products.

■ My work had a direct impact on strengthening customer trust, and the innovative solution was patented by Roche.

TECHNICAL SKILLS

PROGRAMMING	Python (numpy, pandas, scikit-learn), Deep Learning Frameworks (PyTorch, MXNet), R, C/C++
BIG DATA	Accelerated Computing (CUDA), Cloud Computing (AWS, SageMaker), SQL
DEVOPS	Bash, Git, Docker, Open Source, Unit/Integration Testing, CI/CD

PROFESSIONAL SKILLS

COMMUNICATION	Experienced speaker at international conferences and workshops Confident in presenting project ideas and results to peers, leadership, and stakeholders Mentoring and coaching research interns and junior team members
WRITING	Proficient in academic writing and providing guidance to early-stage researchers in their writing Experienced in leading R&D proposals and producing technical reports on milestone deliveries
PROJECT MANAGEMENT	Capable tech lead for research projects and trusted in cross-functional team collaboration Knowledgeable in the principles of Agile development and skilled working in Scrum teams
LANGUAGES	Chinese (native), English (bilingual), Spanish (conversational), French (reading)

SELECTED PUBLICATIONS AND PATENTS

F Liu, **Y Jiao**, J Massiah, E Yilmaz, S Havrylov. "Trans-Encoder: Unsupervised Sentence-Pair Modelling Through Self- and Mutual-Distillations." *ICLR*, 2022.

A Gabryś, **Y Jiao**, V Klimkov, D Korzekwa, R Barra-Chicote. "Improving the Expressiveness of Neural Vocoding with Non-Affine Normalizing Flows." *Interspeech*, 2021.

Y Jiao, A Gabryś, G Tinchev, B Putrycz, D Korzekwa, V Klimkov. "Universal Neural Vocoding with Parallel WaveNet." *ICASSP*, 2021.

F Heinemann, S Kobel, S Dahlmanns, JP Vert, **Y Jiao**. "Failure State Prediction for Automated Analyzers for Analyzing a Biological Sample." *US Patent App.*, 2019.

Y Jiao, JP Vert. "The Weighted Kendall and High-order Kernels for Permutations." *ICML*, 2018.

Y Jiao, A Korba, E Sibony. "Controlling the Distance to a Kemeny Consensus without Computing It." *ICML*, 2016.

Y Jiao, JP Vert. "The Kendall and Mallows Kernels for Permutations." *ICML*, 2015.