

Junwei (Jeremy) Ma

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Professional Summary

Machine Learning Scientist with nearly 6 years of experience in developing and implementing machine learning models and algorithms. Currently focusing on tabular data foundation models as well as general in-context learning approaches, with a strong background in computer vision and information retrieval. Proven ability to deliver research value to businesses through innovative and impactful solutions.

Experience

Layer 6 AI / TD Bank, Machine Learning Scientist

Toronto, Canada
Jan. 2019 to present
5 years 6 months

- Research: Led research on tabular data foundation models and computer vision, resulting in award-winning publications and patents (details in the Publication section).
- Infrastructure: Designed and implemented a high-performance in-house machine learning framework, supporting critical banking, healthcare and algorithm trading use cases.
- Use Cases: Developed machine learning models for banking applications, including mortgage pre-approval and fraud detection.

Modiface, Machine Learning Research Intern

Toronto, Canada
May 2018 to Dec. 2018
7 months

- Focused on model compression and computer vision research

Analog Devices Inc., FPGA and Embedded Software Intern

Toronto, Canada
May 2015 to Aug. 2016
1 year 3 months

- Optimized high speed digital signal processing software and hardware which resulted in significant cost savings

Publications

Retrieval & Fine-Tuning for In-Context Tabular Models

June 2024

V Thomas*, **J Ma***, R Hosseinzadeh, K Golestan, G Yu, M Volkovs, A Caterini
[10.48550/arXiv.2406.05207](https://arxiv.org/abs/10.48550/arXiv.2406.05207) (Preprint for NeurIPS 2024; Accepted at ICML 2024 Workshop)

In-Context Data Distillation with TabPFN

Feb. 2024

J Ma, V Thomas, G Yu, A Caterini
[10.48550/arXiv.2402.06971](https://arxiv.org/abs/10.48550/arXiv.2402.06971) (ICLR 2024 Workshop)

TabPFGen – Tabular Data Generation with TabPFN

Dec. 2023

J Ma, A Dankar, G Stein, G Yu, A Caterini
[10.48550/arXiv.2406.05216](https://arxiv.org/abs/10.48550/arXiv.2406.05216) (NeurIPS Workshop, **Oral Presentation + Runner-up Best Paper Award + Cash Prize**)

X-Pool Cross-Modal Language-Video Attention for Text-Video Retrieval

June 2022

SK Gorti*, N Vouitsis*, **J Ma***, K Golestan, M Volkovs, A Garg, G Yu
[10.1109/CVPR52688.2022.00495](https://arxiv.org/abs/10.1109/CVPR52688.2022.00495) (CVPR 2022)

Weakly Supervised Action Selection Learning in Video

June 2021

J Ma*, SK Gorti*, M Volkovs, G Yu
[10.1109/CVPR46437.2021.00750](https://arxiv.org/abs/10.1109/CVPR46437.2021.00750) (CVPR 2021)

Guided similarity separation for image retrieval

Dec. 2019

C Liu, G Yu, C Chang, H Rai, **J Ma**^{*}, SK Gorti, M VolkovsNeurIPS 2019, **Oral Presentation****Cross-Class Relevance Learning for Temporal Concept Localization**

Nov. 2019

J Ma^{*}, SK Gorti^{*}, M Volkovs, I Stanevich, G Yu[10.48550/arXiv.1911.08548](#)  (ICCV 2019 Workshop)**Semi-Supervised Exploration in Image Retrieval**

June 2019

C Chang^{*}, H Rai^{*}, SK Gorti^{*}, **J Ma**^{*}, C Liu^{*}, G Yu, M Volkovs[10.48550/arXiv.1906.04944](#)  (CVPR 2019 Workshop)**Text-to-image-to-text translation using cycle consistent adversarial networks**

Jan. 2018

J Ma^{*}, SK Gorti^{*}[10.48550/arXiv.1808.04538](#) 

Competitions

YouTube Video Understanding Challenge 2019: 1st place (Gold Medal + Cash Prize)**Google Landmark Retrieval Challenge 2019:** 3rd place (Gold Medal + Cash Prize)**Google Landmark Retrieval Challenge 2020:** 10th place (Gold Medal)**Google Landmark Retrieval Challenge 2020:** 58th place (Bronze Medal)

Technologies

Languages: Python, C++, C, Java, SQL**ML Frameworks:** Pytorch, Tensorflow, scikit-learn**Data Analysis Tools:** Pandas, NumPy, Matplotlib, Seaborn, PySpark

Education

MScAC University of Toronto, Computer Science

2017 to 2019

- GPA: 4.0/4.0
- Teaching Assistant: Algorithm and Data Structures

BASc University of Toronto, Electrical and Computer Engineering

2012 to 2017

- GPA: 3.77/4.0