

Sajjad Pakdamansavoji

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SUMMARY

An enthusiastic scientist well-versed in applied machine learning and software development, I've delved into diverse areas like computer vision, natural language processing, and sequence modeling. My latest passion? Reliable ML development at scale.

EXPERIENCE

- 2024–2024 Technical Advisor, Vector Institute for AI, Toronto, Canada.
Jan–May
- Provide technical insight on model deployment for **3 SMEs** Profound Impact Corp, LVS AI Inc, and Giant Step Inc.
 - Held **Data Readiness** and **Model Deployment** workshop for **40+ technical staff** coming from **20+ SMEs**.
- 2023–2023 Applied AI Intern, Vector Institute for AI, Toronto, Canada.
May–Dec
- Updated **Forecasting Bootcamp** for **data refinement**, **model adjustments**, and **training optimizations**.
 - Held **Fastlane NLP workshop** for **20+ MLAs**, covering from **preprocessing** to **LLM prompting**.
 - Designed a self-assessment tool utilizing **Chain of Thought Prompting** on **Llama2** to generate customized quizzes.
 - Developed a novel maximized-learning platform called **"Booklet"** leveraging **CI/CD**, **Jupyter**, and **Google Cloud**.
- 2021–2023 ML Engineer, TransPlan, Toronto, Canada.
Spet–May
- Contributed to a **ML integrated software** which executes **multi-target multi-source object forecasting**.
 - Presented **proof-of-concept** and **prototypes** supporting its applicability in **real-world setups**.
 - Designed a **graphical user-interface** using **OpenGL** and **PyQt5** for **human-in-the-loop** feedback.
 - Localized and classified objects using online **trajectory forecasting** and machine learning approaches.
 - Reduced overall trajectory estimation error from **20% to 3%**.
- 2019–2019 ML Intern, AVIR Company, Tehran, Iran.
July–Sept
- Established a **multi-modal ML baseline** to translate Iranian **Sign Language (ISL) translation** from video to text
 - Extracted joint feature from hand and face key-points, trained **sequence-to-sequence** models for translation
 - Increased product accuracy from **82% to 90%** on alphabet-level and from **60% to 65%** on world-level translation

PUBLICATIONS

- ITSC 2024 3D Multi-Camera Turning Movement Counts at Intersections; Sajjad PS, Kumar VJ, Baher A, James E.
ECCV 2024 A Multi-Camera/LiDAR, All-Weather, Day/Night Intersection Traffic Dataset; Kartikeya B, Sajjad PS.

PROJECTS

- Jun'22 Multi-Camera Object Trajectory Forecasting.
- Data cleaning, transformation, and camera calibration on **large private dataset** for an **industry partner**(Transplan)
 - Fine-tuned **deep learning** based **re-ID**, multiple **object detection**, and **tracking models** on private dataset
 - Implemented an **open-source** software to annotate and **visualize** resulting object trajectories on the ground plane
 - Efficient **distributed training and inference** of deep learning object-trackers on **multiple GPUs** on the server
 - Improved **MOT CLEAR metric** by **2%** and enhanced trajectory classification accuracy from **80% to 97%**
- May'23 Sentence Generation with Transformers(BERT).
- Parsing, removing stop-words, **preprocessing** of sentences on large public **dataset of 196,640 books** in plain text
 - Studied effect of network **hyper parameters** including embedding, hidden layer size, num layers, and learning rate
 - Efficient implementation of masking to support **variable sentence length** during **training and evaluation on GPUs**
 - The top model had the lowest **perplexity(PP)=3.4** while its rivals perplexity ranged from **5 to 10**
- Nov'22 Sentiment Analysis of tweets using Transformers(XLNet).
- Tokenization, stemming, lemmatisation and preprocessing on public **Sentiment140** containing **1.6 million tweets**
 - Fine tuned **large language models** from **Hugging Face** such as **BERT** and **XLnet** to extract word embeddings
 - Achieved **95%** recognition recall with BERT and **88%** recall with XLNet

EDUCATION

- 2021–2023 MSc in Computer Science, York University.
2016–2021 BSc in Electrical Eng, University of Tehran.

TECHNICAL SKILLS

Languages Python(advance), C++(advance), C, MATLAB, Bash Script
Tools Pytorch, Tensorflow, Sklearn, NLTK, HuggingFace

AWARDS

- 2021 Vector Scholarship in AI, Vector Institute.
2022 VISTA Graduate Scholarship, CVR.
2021 Lassonde Entrance Scholarship, York University.
2018 Founders Scholarship, University of Tehran.