NIMA SARANG

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WORK EXPERIENCE

Machine Learning Scientist III   May 2022 - Present
Expedia Group   Vancouver, BC

- Applied Researcher in Search Engine Marketing (SEM)
- Responsible for developing automated SEM CPC bidding algorithms using online learning, statistics, probabilities, machine learning, deep learning, and common sense.
- Developed bidding algorithms that led to 9 A/B test wins, with technical leadership in 5 of the tests. These algorithms resulted in a significant lift in profit (22%) and bookings (27%).
- Design and manage end-to-end data pipelines for data ingestion, preprocessing, model training, and bid submission; implement offline evaluation systems to assess bid quality and algorithm effectiveness.

Technical Consultant   Sep 2021 - Mar 2022
Ericsson ML/AI Upskill Training Program, Concordia Univ.   Montreal, QC

- Instructed PyTorch and Computer Vision tutorials
- Provided advice and assistance to teams in implementation and debugging

Machine Learning Researcher   Sep 2020 - Apr 2022
Immersive & Creative Technologies Lab, Concordia Univ.   Montreal, QC

- Leveraged deep reinforcement learning to solve massive-scale environments and developed an automatic extraction system for urban road networks from high-resolution aerial imagery

Machine Learning Engineer   Oct 2019 – June 2020
Divar   Tehran, IR

- Divar is a classified ads service with 40+ million users
- Developed a real-time pose estimation model for automatically hiding vehicle license plates in images, and published an educational technical blog on the implementation details.
- Developed a used-car price valuation model that was deployed as a free SaaS to users. Built analytical tools for price trends using Spark.
- Self-taught PyTorch to develop an automated bot for removing prohibited image content.
- Designed a hybrid recommender system for product sales
- Developed a client-side multi-task AI model for image classification and price estimation of merchandise and commodities in real-time. Deployed on Android using Java and TensorFlow Lite. Used fastText and TF-IDF to automatically tag unlabeled data

Research Assistant   Nov 2017 - Sep 2018
Computational Biology Research Center, Amirkabir Univ.   Tehran, IR

EDUCATION

Concordia University   2020 – 2022
M.Sc. in Computer Science   Montreal, QC

- **Visiting Student**, McGill University, Fall 2020
- **GPA:** 4.0/4.0

Amirkabir University of Technology   2015 – 2019
B.Sc. in Computer Science   Tehran, IR

- Dean's Honour List

PUBLICATIONS

📄 Journal Articles

- **N. Sarang** and C. Poullis, "Tractable large-scale deep reinforcement learning," *Computer Vision and Image Understanding*, vol. 232, p. 103 689, 2023.

👥 Conference Proceedings

- F. Zare-Mirakabad, M. Movahedi, **N. Sarang**, and S. Arab, "Protein design using native secondary sub-structures and solvent accessibility.," in *7th Iranian Conference on Bioinformatics*, 2018.

HONORS & AWARDS

- **2nd Place, Team Presagis**   2021
  CleanMalta AI Computer Vision Hackathon

- **Engineering and Computer Science Graduate Scholarship**
  Concordia University   2021

- **Merit Scholarship**
  Concordia University   2020

- **Ranked 3rd in a class of 70 undergraduates**
  Amirkabir University   2019

- **2nd Place, AUT ACM-ICPC**
  Amirkabir University   2016

SKILLS

🧠 **Machine Learning / Deep Learning**
Image Segmentation, Object Detection, Generative Models, Regression Models, Reinforcement Learning

- Worked on designing protein sequences that can fold into a given tertiary structure using AI and evolutionary profiles

TEACHING EXPERIENCE

Teaching Assistant   2021 – 2022
Concordia University   Montreal, Canada
- Computer Vision
- Machine Learning
- Artificial Intelligence

Teaching Assistant   2017 – 2019
Amirkabir University of Technology   Tehran, IR

- Design and Analysis of Algorithms (x2)
- Theory of Computation
- Introduction to Programming
- Graph Theory
- Data Structures and Algorithms

NOTABLE PROJECTS

Stock Price Forecasting with Transformers   Nov 2020

Tweaked Google's TFT architecture and applied it on a set of engineered features from price data, with Soft-DTW as the loss function

Augmented Reality Soccer Using Deep Learning

Bachelor's Thesis   Oct 2018 - June 2019

- Developed a two-player soccer where the game is played with a virtual ball and field.
- Built using Unity, an optimized semantic segmentation model, and an object tracking algorithm

Image Denoising Autoencoder   May 2018

Implemented a CNN-based autoencoder to denoise corrupted images, using Berkeley's BSDS500 dataset.

Fully-Dynamic Graph Connectivity   Mar 2017

Used Euler-tour trees to implement Holm's dynamic connectivity algorithm, achieving amortized operation costs of $O(\log^2 n)$.

ML Toolbox
PyTorch, TensorFlow 2, OpenCV, Pandas, Scikit-learn, Xgboost, fasttext, Apache Spark

Visualization
Plotly, Dash, Streamlit, Matplotlib, D3.js

Development Tools
Jupyter, VS Code, Git, DVC, Pytest

Programming Languages
Python, C++

PERSONAL DEVELOPMENT

Workshops and Seminars

- **Introduction to Cognitive Neuroscience**
  IPM, Tehran, Feb 2018
- **International Computational Biology Workshop**
  AUT, Tehran, Dec 2017

Online Courses

- Practical Deep Learning For Coders (fastai)
- Deep Learning Fundamentals (CognitiveClass.ai)
- Convolutional Neural Networks for Visual Recognition (Stanford CS231n)
- Biology Meets Programming: Bioinformatics for Beginners (UC San Diego)