Vahid Asghari

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Education

The Hong Kong Polytechnic University, Hong Kong — Sep 2018 – Apr 2022
Ph.D. in Infrastructure management — GPA: 3.8/4

Sharif University of Technology, Iran — Sep 2016 – July 2018
MS in Project Management — GPA: 4/4

Experience

Hoenir Int. Ltd. - Technical consultancy for startups — 2021 – Present
Founding Engineer

Partner with Forerunner-data:

- Leading pilot project with two profs. from CityU and ShenzhenU to deploy NLP-based models to novel business research topics.
- Scrapping the Edgar quarterly reports for different companies with Selenium and BeautifulSoup
- Cleaning the raw text and generating the corpus
- Using BERT, fasttext, and other HuggingFace transformers for encoding the raw data
- Training DNN models using PyTorch for predicting corresponding stock price movements
- Evaluating the statistical relationship between reports sentiments and price movements

Partner with Air-Prophet:

- Implemented ETL pipelines and stored the data in a PostgreSQL database
- Trained XGBoost/CatBoost models for air flight duration with 5 minutes MAE for a 6 hours flight
- Reduced the annual costs up to $1.1M and carbon emissions up to 390T for average airline routes

Lifeometer app:

- Led the development using Agile methodology as a Scrum master
- Implemented a scientific health-score module based on statistical concepts
- Designed and implemented the user database on a remote MySQL data server
- Developed REST APIs for the front-end clients using Django/Python
- Deployed the back-end on AWS-EC2 (Linux server), used Nginx as the webserver
- Adapted Test-Driven development methodology. Unit tests covering all use cases and end-points.

RCA-LCA web app:

- Designed and implemented an SQL database for RCA products and machinery
- Created the financial/environmental analysis computation engine with Monte Carlo Simulation
- Developed REST APIs and the backend using Django/Python
- Implemented the front-end client with JavaScript, JQuery, REACT, HTML, CSS
- Deployed the back-end on a Linux server, using Nginx and uwsgi

The Hong Kong Polytechnic University 2018-2022

Post-graduate researcher

ReinforceAM (Thesis):

- Reduced expected costs by 14%, increased utilities by 33% for the Indiana, US, network
- Designed and implemented the first automated multi-agent network-level RL investment agents
- Reduced the computation time of optimization methods from hours to seconds
- Translated the stochastic costs and utility models into python re-usable modules
- Trained ensemble/boosting models with Sci-kit for predicting life cycle costs with a 3% error
- Trained DNN models with Tensorflow/Keras for learning optimization behavior with an 8% error
- Published the first open-source investment valuation model for infrastructure assets
- Enforced clean code for best code readability and maintenance
- Led three post-graduate students in conducting and completing AI-based research
- Published more than 8 scientific papers in top-tier peer-reviewed journals

Hyustan – Forex trading & investment firm 2016 – 2018

AlgoTrading developer

- Designed a portfolio optimization algorithm (Time-series prediction, Volatility estimation, Reliability analysis, and non-linear optimization) in Python
- Created C++ trading bots in Metatrader based on the requests of the Python backend
- Back-tested >2 million technical indicator-based strategies with Python and C++ in Metatrader
- Successfully returned 61% net profit with an 83% success rate on an allocated fund with biweekly investments in Iran's stock market within 6 months

Projects

- PyImbalReg: Developed a python library for preprocessing imbalanced data in regression modeling with more than 500 PyPi installations in 6 months, through implementing scientific and mathematical methodologies
- FIDAP: Developed a python library for feature importance analysis on all supervised and unsupervised machine learning models through data permutation
- CBSA-Wisers Analytics Challenge: Ranked 1st runner-up among more than 20 teams, by 1) developing an NLP-based ML model for prediction of Chinese social media posts' user engagement with the COVID-19, and 2) finding the significant impact of social media sentiments on the Hang Seng index (Skills: NLP, BERT, fasttext, LSTM, CNN, sentiment analysis, statistical analysis)
- ArchSD/HKSTP Hackathons: Ranked 1st runner-up among 17 teams in Two schemes of this hackathon through 1) training and evaluating ML models for predicting construction costs, and 2) achieving the most accurate time-series prediction for construction costs index (Skills: Deep neural networks, ARIMA, statistical analysis)

Publications (Google scholar)

- **Asghari, V.,** & Hsu, S.-C. (2021). An open-source and extensible platform for general infrastructure asset management system. *Automation in Construction*, *127*(April), 103692. https://doi.org/10.1016/j.autcon.2021.103692
- **Asghari, V.,** Hsu, S.-C., & Wei, H.-H. (2021). Expediting life cycle cost analysis of infrastructure assets under multiple uncertainties by deep neural networks. *Journal of Management in Engineering*, *37*(6), 04021059. https://doi.org/10.1061/(ASCE)ME.1943-5479.0000950