Faraz Khadivpour

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Summary

Passionate **Machine Learning Engineer** with over 2 years of experience in creating predictive models. Highly experienced in collecting, cleaning and analysing data using **Python**. Deep understanding of statistical techniques and data mining concepts. Highly motivated with an excellent academic background.

- Expertise in different ML algorithms: Linear and logistic regression, decision tree, KNN, etc.
- Highly experienced working with image data and sequential data.
- Proficient in convolutional neural networks (CNN).
- Experienced in recurrent neural networks (RNN) such as long short-term memory (LSTM).

Technical Skills

- **Programming languages**: Python, R, SQL, HTML, javascript, MATLAB.
- **Deep learning frameworks**: Tensorflow, Keras, tflearn.
- **Machine learning libraries**: Pandas, NumPy, Sklearn, pyCaret.
- **Data visualization libraries**: Matplotlib, Plotly, Seaborn.
- **IDE**: PyCharm, Jupyter notebook, Google colaboratory, Sublime Text, Rstudio.

Experience

Machine Learning Researcher May 2020 – present

Computing Science Department, University of Alberta, (Amii) *Edmonton, AB*

Supervisor: Dr. Matthew Guzdial

- Collaborating with computer science researchers to design and develop novel deep learning algorithms.
- Analysing the inner workings of the neural networks using keras and tensorflow frameworks.
- Proposing a novel interpretable AI method which makes neural networks more understandable to human users.
- Working on an explainable machine learning method on image classification tasks.
- Improving the accuracy of convolutional neural networks using our proposed method.
- Working on state-of-the-art convolutional neural networks such as ResNet, AlexNet, and VGG.
- Dealing with different image datasets such as ImageNet and Cifar10.
- Designed a human subject study to evaluate our proposed method and analysing the results using Rstudio.

Publications:

- Responsibility as a Beneficial Explainable AI Method for Humans and Machines. (Submitted to AAAI 2022)
- Khadivpour F, Guzdial M. Explainability via Responsibility. The 2020 Intelligence and Interactive Digital Entertainment (AIIDE) Workshop on Experimental AI in Games (EXAG). DOI: arXiv:2010.01676.

Machine Learning Developer Jan 2020 – May 2020

Mechanical Engineering Department, University of Alberta. (NCBLab) *Edmonton, AB*

Supervisor: Dr. Hossein Rouhani

- Worked as a team member on a project for RWDI consulting firm.
- Designed and developed highly accurate ML models to predict a specific variable in wind tunnels.
- Dealt with geometric data extracted from over 120 constructions.
- Used pyCaret library to develop and evaluate different ML algorithms such as xgboost, ridge and lasso regression.
- Implemented python scripts to extract features from 3D building models in Rhinoceros software.
- Applied data preprocessing and used different dimensionality reduction methods such as PCA and autoencoders.

- Used different methods such as k-fold cross validation and grid search to perform hyper parameter tuning.
- Implemented accurate deep neural networks using keras and tensorflow.
- Created charts and plots in jupyter notebook to perform statistical analysis and visualized data using matplotlib.

Research Assistant Jan 2016 – Jan 2019
Environmental Engineering Department, University of Tehran. *Tehran, Iran*

Supervisors: Dr. Mohammad Ali Abdoli and Dr. Maryam Pazoki

- **Thesis**: Optimization of the bio energy production from anaerobic digestion, using data mining and machine learning methods.
- **Publication**: Shayesteh AA, Koohshekan O, Khadivpour F, Kian M, Ghasemzadeh R, Pazoki M. Industrial waste management using the rapid impact assessment matrix method for an industrial park. Global Journal of Environmental Science and Management. 2020 Apr 1;6(2):261-74. DOI: 10.22034/GJESM.2020.02.10

Education

M.Sc. in Environmental Engineering 2015 – 2018
University of Tehran *Tehran, Iran*

B.Sc. in Civil Engineering 2010 – 2015
K.N.Toosi University of Technology *Tehran, Iran*

Certificates

Machine Learning Technician Certification Fall, 2020
Alberta Machine Intelligence Institute (Amii) *Edmonton, AB*
The course comprises 100 hours of facilitated training made up of virtual lab, lecture and group sessions:

- Foundations of Machine Learning
- Foundations of Applied Machine Learning
- Decision Trees and Evaluation
- Data Understanding
- kNNs and Features
- Regression and ML Zoo

Coursework

Deep Learning Summer 2020
Coursera Specialization *DeepLearning.ai*

Applied Data science using Python Fall 2017
Coursera Specialization *University of Michigan*