

# Ali Hassanzadeh,

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## Experience

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**Reinforcement Learning Scientist** *Pathmind Inc, San Francisco, CA* Nov 19 - May 20

- **Optimization of Industrial Processes using Reinforcement Learning**

- Prototyped a continuous learning engine to learn from real experience and plan with a simulation.
- Successfully Applied the Proximal Policy Optimization(PPO) Algorithm to reduce the electricity cost of an Australian factory by 18% compared to the baseline(random action).
- Designed the backend bridge between Anylogic(Written in Java) to RLib(written in Python).

**Artificial Intelligence Fellow** *Insight Data Science, San Francisco, CA* Sep 19 - Nov 19

- **Training Environment for Autonomous Vehicle using Reinforcement Learning**

*A project in collaboration with In-Q-Tel, Lab 41 (github.com/ahassanzadeh/RoboGym)*

- Used **pixels and environment parameters** as the input to the Deep Reinforcement Learning model
- Environment, Observations, Actions, Reward functions are defined in (**Unity engine written in C#**).
- A C#-Python bridge utilized(Unity ml-agents) to use the state-of-art model-free on-policy Deep Reinforcement Learning model for continuous action space (**Proximal Policy Optimization(PPO)**)
- Multi-agent end-to-end training is completed using **AWS EC2-P2 xlarge instance** [training speed = 100K episode/hour]

**Data Scientist Intern** *Digit, San Francisco, CA* May 19 - Aug 19

- **Purchasing Time and Value Prediction using Time Series**

*A contracted data Science project for Digit (https://github.com/ahassanzadeh/Digit\_Transactions\_Prediction)*

- **Goal:** Forecast the next purchased date and monetary value of 375K customers
- **Dataset:** 1 million rows and 3 Columns of Customer ID, Invoice Date and Unit price.
- **Outcome 1:** The frequency of the customers transactions for each customer evaluated separately and transaction dates are forecasted. **The accuracy of the xgboost model is 75%**
- **Outcome 2:** The transactions' value are predicted using **K-means and LSTM with 80% accuracy**

**Doctoral Researcher** *University of California Solar Institute(UC Solar), Atwater, CA* Aug 15 - May 19

Manage a research team consist of 5 researchers to gather solar sensory data and analyzed as follows:

- **Solar Irradiation Forecasting**

- **Goal:** Accurate prediction of annual solar irradiation is one of the major component to transform from fossil fuel to solar energy all around the world.
- **Dataset:** National Renewable Energy Lab's dataset include **20 parameters for 10 years** .
- **Machine learning methods:** Linear regression, Random Forrest, Naive Bayes, PCA and Gradient-BoostedRegressor(GBR) using Python .
- **Outcome:** The GradientBoostedRegressor(GBR) algorithm showed the best performance which could predict the solar irradiation for **the test dataset with 80% accuracy.**

## Technical Skills

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- **Languages:** Python(4+ yrs), MATLAB(7+ yrs), SQL/C++/HTML/Java (2+ yrs)
- **ML Tools:** TensorFlow 1.x/2.x, Keras, PyTorch, Scikit-Learn, Numpy, Pandas
- **Engineering Tools:** AWS, Git, Streamlit, Kafka, Hadoop

## Education

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**Ph.D., Engineering, Applied Machine Learning** , *University of California, Merced, US* May 2020

**Master, Engineering - Computational Modeling** *Sharif Uni of Tech, Iran* June 2015

**Bachelor, Engineering- Robotics** *Mashhad University, Iran* July 2013