

Animesh Goyal

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EDUCATION

THE UNIVERSITY OF TEXAS AT AUSTIN, USA

Master of Science in Operation Research and Industrial Engineering

May 2020

GPA: 3.75/4.00

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI, INDIA

Bachelor (Hons.) of Engineering, Manufacturing Engineering

May 2017

GPA: 3.85/4.00

WORK EXPERIENCE

ARTIFICIAL INTELLIGENCE LABORATORY, UT AUSTIN

Austin, TX

Master Thesis

June 2019 - Present

- Working under the supervision of Dr. Peter Stone on developing an environment for implementing and testing various **Multi-Agent Deep Reinforcement Learning** policies to study their effect on achieving pre-defined objectives
- Project involves integration of functionalities to several thousand lines of code in **RoboCup Rescue Simulator** (RCRS)
- Built a new framework** to incorporate Reinforcement Learning policies to RCRS using **OpenAI's Gym** toolkit
- Compared algorithms like Proximal Policy Optimization (**PPO**) and Deep Q-networks (**DQN**) on different sized maps to find out which one works better in a particular map setting

WEIR MINERALS

Bangalore, India

Graduate Engineer Trainee

Jan 2017 - Jun 2018

- Developed and validated component scenario to reduce part tooling estimate by **20%** which resulted in the **annual savings of \$4.2M**
- Wrote **SQL queries** to extract models and identify cost drivers in machine component design
- Developed weekly report for the executives which helped **discover actionable insights and KPI's** in Tableau

ACHIEVEMENT

- Winner** of UT Austin's Data Hack 2019 organized by Microsoft Azure, Oracle and ML-DS group at UT Austin
- Published Machine Learning articles on Medium.com which garnered more than **10k+ views**

PROJECTS

SOLVING COLD USER PROBLEM IN RECOMMENDATION SYSTEM USING MULTI-ARMED BANDIT (MAB)

Algorithms Applied: **Matrix Factorization, Thompson Sampling, Epsilon Greedy, Upper Confidence Bound**

- Built a model to recommend movies to a new user using Multi-Armed Bandit algorithms like Epsilon Greedy, UCB
- Implemented Matrix Factorization to fill sparse user rating matrix and clustered them using K-means clustering
- Thompson Sampling performed best with normalized discounted cumulative gain (NDCG) score of 0.94

ANOMALY DETECTION USING A SEMI SUPERVISED HYBRID MODEL APPROACH

Algorithms applied: **KNN, Auto Encoder, One-Class SVM**

- Built a semi supervised hybrid model in Tensorflow using Auto Encoder and KNN for optimizing marketing efforts
- Compared and evaluated results with One-Class SVM in terms of their AUC scores
- Final model improved detection accuracy and reduced computational complexity

PREDICTING APPLY RATE FOR A JOB SEARCH WEBSITE

Algorithms Applied: **XGBoost, Random Forest, Logistic Regression, Stacking**

- Analyzed and processed data using various data visualization tools like Seaborn, feature engineering tools and performed hyperparameter tuning using Bayesian Optimizer
- Ranked 6th** among a class of 400 students in the In-class Kaggle Competition achieving an AUC score of 0.944

SKILLS/ COURSES

- Languages** Python | R | Java | SQL | MATLAB
- Packages/ Technologies** Spark | Keras | TensorFlow | Fastai | Numpy | Pandas | Plotly | Scikit-learn | SciPy | MapReduce | Seaborn | Linux | Version Control (Git) | Tableau | Shell Scripting
- Statistical Skills** Regression | Classification | Clustering | Dimensionality Reduction | Hypothesis Testing
- Courses** Data Science Lab | Time Series Analysis | Linear Statistical Models | Applied Probability