Soo Ihk Ro

aduroro@gmail.com | (310) 482-0197 | https://www.linkedin.com/in/sooihk-ro/ | sooihk.github.io

EDUCATION

UNIVERSITY OF TEXAS, AUSTIN   Sept. 2022 - Dec. 2024
Master of Science in Data Science

Coursework: Data Structures & Algorithms, Regression & Probability Modeling, Machine Learning, Deep Learning, Advanced Predictive Models, Data Exploration & Visualization, Natural Language Processing, Reinforcement Learning, Design Principles & Causal Inference

UNIVERSITY OF CALIFORNIA, LOS ANGELES   Sept. 2020 - Sept. 2021
Certificate in Data Science

Coursework: Introduction to Data Science, Exploratory Data Analysis and Visualization, Big Data Management, Machine Learning (R)

EL CAMINO COLLEGE, TORRANCE   Sept. 2018 - June 2021
Certificate of Completion in Computer Science

UNIVERSITY OF CALIFORNIA, LOS ANGELES   Sept. 2015 - June 2017
Bachelor of Science in Chemistry

FEATURED PROJECTS (more details at sooihk.github.io)

Deep Learning: SuperTuxKart Ice Hockey State Based Agent
- Developed a state-based agent for 2v2 ice hockey in SuperTuxKart using a combination of imitation learning and reinforcement learning techniques, optimizing the agent's performance in goal-scoring tasks.
- Engineered features from game environment data (e.g., puck position, distance to goal) to enable efficient decision-making, enhancing the agent's strategic movements in dynamic, competitive environments.
- Implemented and fine-tuned neural network models to improve the agent's ability to navigate and compete against AI opponents, resulting in consistent performance improvements.

Deep Learning: SuperTuxKart Convolutional Neural Network vision-based driving
- Designed and trained a convolutional neural network (CNN) using PyTorch to predict optimal driving points from image data in SuperTuxKart, enabling vision-based autonomous driving.
- Implemented a custom controller to steer and accelerate the kart based on CNN predictions, achieving real-time performance in navigating complex tracks.

Machine Learning: Regression Modeling for Red Wine Quality Prediction
- Developed and evaluated multiple regression models (e.g., Multiple Linear Regression, LASSO, Random Forest) to predict red wine quality based on physicochemical properties, achieving 67% accuracy with the Random Forest model.
- Performed feature engineering, data cleaning, and exploratory data analysis on a dataset of 1,599 wine samples, optimizing model performance through outlier removal and cross-validation.

Exploratory Data Analysis : Visualizing when and where most robberies occur in the city of Chicago
- Performed exploratory data analysis on over 7 million crime records from Chicago Police Department to identify patterns in robbery occurrences, focusing on time, location, and community impact.
- Created visualizations using RStudio and Tableau, including heatmaps and time-series plots, to highlight robbery hotspots and peak times, providing actionable insights for public safety.

EXPERIENCE

Research Assistant - UCLA   June 2016 - Sept. 2018
- **Synthesized redox-switchable Yttrium and Indium alkoxide complexes to selectively control the ring-opening polymerization (ROP) of L-lactide and trimethylene carbonate, enhancing polymerization efficiency through redox modulation.**
- **Investigated the impact of ligand substituents on catalyst activity, focusing on derivatives with para tert-butyl groups to modulate reactivity and improve polymerization control.**

SKILLS

Programming: Python (NumPy, Scikit-learn, PyTorch, Pandas), R, SQL, MATLAB, C++, Java
Visualization and Statistical Software: Tableau, Python (Matplotlib, Seaborn)
Machine Learning: Random Forest, Deep Learning, Unsupervised Learning (Clustering, PCA), Regressions, SVM, XGBoost