Simone Reynoso Donzelli

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Summary

I hold a BSc. in Chemical Engineering from Universidad Iberoamericana (2022) and currently pursue graduate studies at the University of Waterloo. My research expertise lies in implementing advanced Machine Learning techniques, particularly Reinforcement Learning, to optimize chemical engineering processes. My work centers on optimizing process flowsheet design for both steady-state and dynamic conditions. In addition to my engineering background, programming has been a significant passion of mine. I thrive on the continuous learning and updating of knowledge within this field. On my personal website, you can explore various codes and projects that showcase my dedication and proficiency in programming.

Professional Background

•Cooper Standard *January 2024 - Ongoing*

Machine Learning Engineer Stratford, ON

– As an ML Engineer at Cooper Standard's mixing facility, I explored, queried, and provided insights on production data to develop accurate regression models. During my time at Cooper Standard, I enhanced my skills with SQL Server Management Studio, working with a 20 GB database for querying and pivoting data. Subsequently, I built insightful regression models in PyTorch and XGBoost. Thanks to the high accuracy of these models, a 2% waste decrease and significant cost savings were achieved.

•University of Waterloo *January 2023 - Ongoing*

Graduate student Waterloo, ON

– In my graduate studies I focused on addressing mixed integer dynamic optimization problems, primarily employing the Proximal Policy Optimization (PPO) algorithm. I customized neural network actors for hybrid and masked discrete action selection within PPO. My research aims to design feasible and near-optimal chemical plant flowsheets from initial inlet streams, integrating advanced simulation suites like ASPEN Plus.

•Universidad Iberoamericana *January 2022 - August 2022*

Research assistant Mexico City

– During my undergraduate studies I developed a Python-based hybrid platform integrating ASPEN Plus for real-time optimization. Utilizing genetic algorithms from the pymoo library, I optimized the composition of a working fluid in an Organic Rankine Cycle (ORC) to enhance system efficiency and performance. Project's code

Academic Background

•University of Waterloo *2023 - Ongoing*

MS in Chemical Engineering Cummulative GPA: 9.2/10

•Universidad Iberoamericana (IBERO) *2018-2022*

BS in Chemical Engineering Cummulative GPA: 9.6/10

Highest CGPA of the class

•Schweizerschule Mexiko – Colegio Suizo de México (CSM) *2004-2018*

Elementary to High School studies Cummulative GPA: 9.5/10

Highest CGPA of the class

Projects

•AI Based Road Inspection System for Mexico - Omdena *March 2023 - June 2023*

Building and training an intelligent model to detect road defects in real-time. (Lead ML engineer)

As a member of a machine learning (ML) team, I contributed to the development of a web application that enables to detect road defects in real-time. My primary responsibilities encompassed data labeling through the Roboflow web application, as well as conducting research and training of a YOLO algorithm, a pre-trained deep convolutional neural network used for real-time detection. The training process involved utilizing data sets comprising various road irregularities such as cracks, patches, and rutting for real time detection.

– Tools & technologies used: Python (Tensorflow, Pytorch, Scikit, Pandas, others)

•Green Algeria Project - Omdena *September 2022 - December 2022*

Building an intelligent control system for greenhouses (Lead ML engineer)

The primary goal of this project was to determine optimal values for effectively managing temperature, humidity, water usage, light, and other parameters within a greenhouse, while also ensuring timely notification to growers regarding crop-related issues such as growth rate, pests, and diseases. As a member of the team, my responsibilities encompassed exploratory data analysis, involving data cleaning and interpretation. Additionally, I contributed to the research and development of machine learning models to aid in achieving the project objectives.

– Tools & technologies used: Python (Tensorflow, Pytorch, Scikit, Pandas, Numpy, Matplotlib, others)

Technical Skills and Interests

Languages: Spanish (Native), Italian (Native), English (Level C2 with Cambridge Certification), German (Level C1 with Deutsches Sprachdiplom Certification), French (Level B2 with DELF Certification), Chinese (Level A2 with HSK Certification)
Advanced Programming Languages: Python, Microsoft Office Suite, SQL, PowerBi
Intermediate Programming Languages: MatLab, HTML, CSS, JS
Chemical Engineering simulation programs: ASPEN Plus, DWSIM
Soft Skills: Leadership, Communication, Teamwork, Adaptability, Self-Taught, Resourcefulness, Time management
Areas of Interest: Optimization, Engineering (Chemical Engineering), Machine Learning, Data Science. Deep Learning, Reinforcement Learning

Extracurricular and leadership experience

–**Volunteer,** Work with underprivileged children at Gertrudis Bocanegra Institute *August 2016 – June 2018*
–**Dean,** Work in a catholic summer camp in Dublin (Dublin Oak Academy) *June 2015 – August 2015*