

Daniel Alberto Avila García

MSc Student in Mobility Engineering — Politecnico di Milano, Milan, Italy.

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PROFESSIONAL PROFILE

MSc student in Mobility Engineering, passionate about exploring how data, AI, and systems thinking can transform the way cities tackle mobility and traffic challenges. Skilled in analytical thinking, problem solving, and teamwork, supported by effective communication and a responsible attitude. I have explored the complex challenges of urban mobility and understand how technological innovation can reshape the way cities manage transportation and traffic. My interest in data science drives my belief in its power to support informed and efficient mobility solutions.

EDUCATION

Politecnico di Milano, Milan, Italy

Master of Science in Mobility Engineering

Expected Graduation date: December 2026

Universidad Nacional de Colombia, Bogotá, Colombia

Bachelor of Science in Civil Engineering

Thesis Title: Building and Calibration of Microscopic Simulation Models Using SUMO for Assessing Traffic Control Strategies

Graduation date: September 2024

WORK EXPERIENCE

Purdue University, Lyles School of Civil Engineering

West Lafayette, IN, United States of America

Undergraduate Research Assistant

February 2024 — August 2024

Connected Automated and Resilient Transportation Laboratory

- Built microscopic traffic simulation models for urban corridors in SUMO to evaluate and compare traffic signal control strategies.
- Designed and optimized actuated traffic light programs, improving flow efficiency and reducing simulated congestion.
- Used TraCI to extract real-time simulation data and generate detailed performance reports.
- Processed and analyzed traffic datasets using Pandas, Statsmodels, and SciPy, providing data-driven insights for traffic control improvements.
- Created clear and interactive visualizations with Plotly, Seaborn, and Matplotlib to communicate results effectively.
- Collaborated on the Michigan University City AV Challenge, contributing to an autonomous EGO vehicle module, enhancing system precision and safety—The team placed 4th overall.

Universidad Nacional de Colombia

Bogotá, Colombia

Undergraduate Research Assistant

August 2022 — December 2022

Structural Engineering Laboratory

- Assisted in the setup, inspection, and quality control of concrete sample production, ensuring reliable lab procedures.
- Collected and analyzed data from strain gauge sensors during mechanical testing to support structural behavior assessment.
- Pre-processed and cleaned experimental datasets to ensure accuracy and usability in ongoing research.
- Contributed to lab operations and research workflows, streamlining experimental processes and improving data consistency.

LICENSES AND CERTIFICATIONS

- **CS50: Introduction to Data Bases** — Harvard University, 2024
- **Big Data** — Universidad Nacional de Colombia, 2023
- **Introduction to Machine Learning with Python** — Universidad Nacional de Colombia, 2023
- **Data Science and Visualization with Python** — Universidad Nacional de Colombia, 2023
- **CS50: Ready Player 50** — Harvard University, 2023
- **Introduction to Git and GitHub** — Google, 2023
- **CS50: Introduction to Programming with Python** — Harvard University, 2023
- **CS50: Introduction to Computer Science** — Harvard University, 2022

PRESENTATIONS

Purdue University - Spring 2024 UREP-C Symposium

Building and Calibration of Microscopic Simulation Models Using SUMO for Assessing Traffic Control Strategies

Supervised by Prof. Yiheng Feng, Connected Automated and Resilient Transportation Laboratory

- **Author and Presenter:** Daniel Avila.

OTHER EXPERIENCES AND PROJECTS

Implementation of Machine Learning Models for the Classification of Fashion MNIST dataset using Scikit-learn

Universidad Nacional de Colombia

Final project — Machine Learning and Data Science Diploma

2023 Fall term

- Labeled data and generated training/testing datasets for supervised image classification.
- Applied image pre-processing techniques using NumPy and OpenCV (cv2).
- Implemented multiple models including KNN, Decision Tree, Random Forest, and Neural Network to classify clothing into 10 categories (e.g., T-shirt, Dress, Sneaker, etc.).
- Built a Flask-based web application to test the trained models with real-time user input.

TEST SCORES

IELTS (academic): 7.0 - C1 (overall score)

Test date: March 2023

SKILLS

- **Programming & Tools:** Python, Git, SQL, Numpy, Pandas, StatsModels, Scipy, Scikit-learn, Flask, PyTorch.
- **Data Visualization:** Google Looker Studio, Matplotlib, Seaborn, Plotly, GeoPandas.
- **Modeling & Simulation:** PTV Visum, SUMO, TraCI, PTV VISTRO, GIS.
- **Design & Productivity:** Microsoft Office (Word, Excel, PowerPoint), AutoCAD
- **Soft Skills:** Fast learner, self-motivated, punctual, hard-working, strong communication, critical thinker, team-oriented, prompt engineering.
- **Languages:**
 - English — Professional proficiency
 - Italian — Basic proficiency
 - Spanish — Native