Daniel Alberto Avila García

MSc Student in Mobility Engineering — Politecnico di Milano, Milan, Italy.
danielalberto.avila@mail.polimi.it — +39 351 312 7340 — linkedin.com/in/daniel-avila-g — github.com/daavila1

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.

HONORS AND AWARDS

Merit Based Scholarship - Gold
Issued by: Politenico di Milano, February 2025

Fully Funded Research Stay at Purdue University
Issued by: Universidad Nacional de Colombia — Purdue University, January 2024

TEST SCORES

IELTS (academic): 7.0 - C1 (overall score)
Test date: March 2023

SKILLS

- **Programming & Tools:** Python, Git, SQL, Numpy, Pandas, StatsModels, Scypy, 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