Damian Dailisan | Curriculum Vitae

Stampfenbachstrasse 48 – 8006 Zurich – Switzerland

✉ damian.dailisan@gmail.com • 🌐 damiandailisan.com • ⭘ temetski

Postdoctoral researcher with a strong background in reinforcement learning, data-science, large-scale modeling, and computational social science. I have experience leading projects on decentralized traffic control and smart cities. My experience spans academia, industry, and government collaborations. Passionate about data science, machine learning, and technology.

Experience

ETH Zurich, Computational Social Science **Zurich, Switzerland**
Postdoctoral Researcher and Lecturer *Oct 2022 – Present*
- Lead Postdoctoral researcher on the ERC-funded DIT4TraM project.
- Research on reinforcement learning algorithms applied to traffic signal control.
- Co-lecturer on "Complex Social Systems: Modeling Agents, Learning, and Games" course.

Asian Institute of Management, ACCeSs Laboratory **Metro Manila, Philippines**
Data Scientist and Adjunct Professor *Aug 2021 – Sept 2022*
- Lead Data Scientist for the MINERVA smart city project in partnership with Baguio City.
- Created an agent-based scenario for land-use forecast of Cauayan City under the PATURO smart city project.
- Conducted machine learning studies for predicting water consumption for our client, Manila Water Company Inc.
- Taught programming for data science under the Master of Science in Data Science
- Co-mentored MS Data Science students for their capstone projects with industry and government clients.

University of California Berkeley, Mobile Sensing Lab **Berkeley, California**
Research Visit *Sept – Oct 2019*
- Worked on Deep Reinforcement Learning (RL) for coordinated traffic signals.
- Worked on Flow project's (Deep RL traffic framework) API, parallelizing running of Aimsun environments.

Philippine–California Advanced Research Institutes — DARE **Metro Manila, Philippines**
Research Fellow *2017 – 2021*
- Developed a pipeline for simulating traffic in Metro Manila.
- Worked on agent-based cellular automata models of traffic.
- Co-developed a python interface to OpenTrafficModels.

National Institute of Physics, Instrumentation Physics Laboratory **Metro Manila, Philippines**
Researcher *2012 – 2021*
- Studied phase transitions in agent-based cellular automata models of traffic.
- Worked on geospatial analysis of OpenStreetMaps and school enrollment data from the Department of Education.
- Worked on video processing of traffic and pedestrian feeds using opencv and YOLOv3.
- Supervised work of graduate and undergraduate students in the Complex Systems subgroup of Prof. May T. Lim.

Qwento Analytics **Metro Manila, Philippines**
Co-Founder and Chief Scientific Officer *2016 – 2018*
- Applied machine learning to forecast demand from 2 years worth of national shoe sales data our client.
- Developed a business analytics dashboard for pilot clients.

University of the Philippines Diliman, National Institute of Physics **Metro Manila, Philippines**
Instructor *2015 – 2017*
- Taught elementary physics and computational physics courses for undergraduate students.

Education

University of the Philippines Diliman **2017 – 2020**
Dissertation: *"Modeling Transport: Different Aspects of Urban Mobility Research"* *PhD Physics*
 Most outstanding Ph.D. Graduate
University of the Philippines Diliman **2015 – 2017**
Thesis: *"Modeling lane changing and random slowdown in vehicular traffic using a cellular automata model"* *MS Physics*
University of the Philippines Diliman **2010 – 2015**
Thesis: *"Modeling the effects of lane discipline on heterogeneous traffic flow"* *BS Applied Physics (Instrumentation)*
 Magna Cum Laude, Most Outstanding Graduate in BS Applied Physics

Journal Publications

[1] R. K. Dubey, D. **Dailisan**, J. Argota Sánchez–Vaquerizo, and D. Helbing, "Fairlane: a multi-agent approach to priority lane management in diverse traffic composition", Transportation Research Part C: Emerging Technologies **171**, 104919 (2025) 10.1016/j.trc.2024.104919.

[2] M. Dorosan, D. **Dailisan**, J. F. Valenzuela, and C. Monterola, "Use of machine learning in understanding transport dynamics of land use and public transportation in a developing city", Cities **144**, 104587 (2024) 10.1016/j.cities.2023.104587.

[3] R. K. Dubey, J. Argota Sanchez-Vaquerizo, D. **Dailisan**, and D. Helbing, "Cooperative Adaptable Lanes for Safer Shared Space and Improved Mixed-Traffic Flow", Transportation Research Part C: Emerging Technologies (2024) 10.1016/j.trc.2024.104748.

[4] M. Korecki, D. **Dailisan**, J. Yang, and D. Helbing, "Democratizing traffic control in smart cities", Transportation Research Part C: Emerging Technologies **160**, 104511 (2024) 10.1016/j.trc.2024.104511.

[5] J. C. Yang, D. **Dailisan**, M. Korecki, C. I. Hausladen, and D. Helbing, "LLM voting: human choices and AI collective decision-making", Proceedings of the AAAI/ACM Conference on AI, Ethics, and Society **7**, 1696–1708 (2024) 10.1609/aies.v7i1.31758.

[6] M. Korecki, D. **Dailisan**, and D. Helbing, "How well do reinforcement learning approaches cope with disruptions? The case of traffic signal control", IEEE Access (2023) 10.1109/ACCESS.2023.3266644.

[7] M. Liponhay, J. F. Valenzuela, M. Dorosan, D. **Dailisan**, and C. Monterola, "A dynamic urban mobility index from clustering of vehicle speeds in a tourist-heavy city", Applied Sciences **13**, 12763 (2023) 10.3390/app132312763.

[8] D. **Dailisan**, M. Liponhay, C. Alis, and C. Monterola, "Amenity counts significantly improve water consumption predictions", PLOS ONE **17**, e0265771 (2022) 10.1371/journal.pone.0222766.

[9] D. N. **Dailisan**, and M. T. Lim, "Crossover transitions in a bus–car mixed-traffic cellular automata model", Physica A **557**, 124861 (2020) 10.1016/j.physa.2020.124861.

[10] D. N. **Dailisan**, and M. T. Lim, "Vehicular traffic modeling with greedy lane-changing and inordinate waiting", Physica A **521**, 715–723 (2019) 10.1016/j.physa.2019.01.107.

[11] L. J. M. Rubio, D. N. **Dailisan**, M. J. P. Osorio, C. C. David, and M. T. Lim, "Modeling the residential distribution of enrolled students to assess boundary-induced disparities in public school access", PLOS ONE **14**, 1–15 (2019) 10.1371/journal.pone.0222766.

[12] D. N. **Dailisan**, and M. T. Lim, "Agent-based modeling of lane discipline in heterogeneous traffic", Physica A **457**, 138–147 (2016) 10.1016/j.physa.2016.03.104.

Selected Conference Proceedings

[1] D. N. **Dailisan**, A. C. M. Balingit, and M. T. Lim, "Mesoscopic modeling framework for public transport traffic", in Proceedings of the Samahang Pisika ng Pilipinas, Vol. 39 (2021),

[2] D. N. **Dailisan**, and M. T. Lim, "Rider-centric analysis of public utility vehicle route modernization in the national capital region", in Proceedings of the Samahang Pisika ng Pilipinas, Vol. 39 (2021),

[3] I. M. Fenis, D. N. **Dailisan**, and M. T. Lim, "Characterizing pedestrian scenes with discomfort index", in Proceedings of the Samahang Pisika ng Pilipinas, Vol. 39 (2021),

[4] E. Jose, D. N. **Dailisan**, and M. T. Lim, "Evaluating geospatial efficiency of facilities through dirichlet tessellation areas and centroid proximity analysis", in Proceedings of the Samahang Pisika ng Pilipinas, Vol. 39 (2021),

[5] D. N. **Dailisan**, and M. T. Lim, "Simultaneous identification of transportation-deficient zones and transit hubs through Origin-Destination and Boarding-Alighting surveys", in Proc. Samahang Pisika ng Pilipinas, Vol. 38, 1 (2020).

[6] I. M. Fenis, D. N. **Dailisan**, and M. T. Lim, "Traffic dynamics of multiple paired U-turn slots", in Proc. Samahang Pisika ng Pilipinas, Vol. 38, 1 (2020).

[7] K. Bartilad, D. **Dailisan**, and M. Lim, "Estimating pedestrian traffic using bike share data", in Proc. Samahang Pisika ng Pilipinas, Vol. 37, 1 (2019), SPP–2019–3F–02.

[8] I. Fenis, D. **Dailisan**, and M. Lim, "Speed estimation of vehicle traffic", in Proc. Samahang Pisika ng Pilipinas, Vol. 35, 1 (2017), SPP–2017–PB–07.

[9] L. G. Rizada, D. **Dailisan**, and M. Lim, "Fluctuations in step counts derived from accelerometer data", in Proc. Samahang Pisika ng Pilipinas, Vol. 35, 1 (2017), SPP–2017–1D–03.

Skills

- **Programming Languages:** Knowledgeable in Python, Matlab, C++, Java, JavaScript.
- **Data Analytics:** Proficient in python libraries such as pandas, geopandas, networkx, and multiprocessing. Experience using spark for multiprocessing. Experience in video and image processing using opencv.
- **Machine Learning:** Experience in using python libraries such as scikit-learn, tensorflow, keras, pytorch, openai-gym, and rllib for machine learning and deep learning.
- **Geospatial:** Proficient in using python geospatial libraries such as geopandas, fiona, shapely, and pyproj. Experience in using QGIS and PostGIS queries.
- **Traffic Simulators:** Experience working with commercial and open source traffic simulation software such as Aimsun and SUMO. Also developed own research software implementing the Nagel-Schreckenberg model used in my publications.
- **Languages:** Native fluency in both English and Filipino. Spoken and written proficiency at the A2–B1 level in German.