Viet-Anh Le

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Research Interest

- Model Predictive Control
- Learning for Optimization and Control
- Distributed Optimization
- Multi-Agent Systems
- Connected and Automated Vehicles
- Robotics

Education

University of Delaware — Newark, DE USA
Ph.D. in Mechanical Engineering — Aug. 2021–Aug. 2025
Advisor: Dr. Andreas Malikopoulos, (currently Professor at School of Civil and Environmental Engineering, Cornell University)

Northern Arizona University — Flagstaff, AZ USA
M.Sc. in Informatics (with Distinction) — Aug. 2019–May 2021
Advisor: Dr. Truong X. Nghiem, (currently Associate Professor at Department of Electrical and Computer Engineering, University of Central Florida)

Hanoi University of Science and Technology — Hanoi, Vietnam
B.Sc. in Control Engineering and Automation — Aug. 2014–Jun. 2019

Professional Experience

University of Pennsylvania — Philadelphia, PA USA
Postdoctoral Researcher - Department of Electrical and Computer Engineering — Aug. 2025–Present

Cornell University — Ithaca, NY USA
Visiting Graduate Scholar - Systems Engineering Field — Aug. 2023–Aug. 2023
- Learning and Control for Connected and Automated Vehicles in Mixed Traffic
- Development of IDS's Scaled Smart City Robotic Testbed (Version 2.0 at Cornell University)

Honda Research Institute USA — Ann Arbor, MI USA
Graduate Student Intern — Jun. 2023–Aug. 2023
- Social Navigation for Multiple Robots in Crowded Environments

University of Delaware — Newark, DE USA
Graduate Research Assistant - Department of Mechanical Engineering — Aug. 2021–May 2023
- Learning and Control for Connected and Automated Vehicles in Mixed Traffic

University of Delaware — Newark, DE USA
Graduate Teaching Assistant - Department of Mechanical Engineering — Aug. 2021–May 2022
- Vibration and Control (Lab) - MEEG 312 - Fall 2021
- Dynamics - MEEG 211 - Spring 2022

Northern Arizona University — Flagstaff, AZ USA
Graduate Research Assistant - School of Informatics, Computing, and Cyber Systems — Aug. 2019–May. 2021
- Learning-Based Model Predictive Control with Gaussian Processes
- Adaptive Sampling for Mobile Robotic Sensor Networks

Vietnam Maritime University — Haiphong, Vietnam
Undergraduate Research Intern - School of Mechanical Engineering — Sep. 2017–Mar. 2019
- Applications of Modern Control Theory in Designing Digital Controllers for Crane Systems
- Research, Design, and Manufacture of a Floating Crane Testbed in the Laboratory

Publications

Journal Articles

[1] **V.-A. Le** and A. A. Malikopoulos, "Controller Adaptation via Learning Solutions of Contextual Bayesian Optimization", *IEEE Robotics and Automation Letters (accepted), arXiv preprint arXiv:2403.04881*, 2025.

[2] **V.-A. Le** and A. A. Malikopoulos, "Distributed Optimization for Traffic Light Control and Connected Automated Vehicle Coordination in Mixed-Traffic Intersections", *IEEE Control Systems Letters*, vol. 8, pp. 2721–2726, 2024.

[3] **V.-A. Le**, B. Chalaki, F. N. Tzortzoglou, and A. A. Malikopoulos, "Stochastic Time-Optimal Trajectory Planning for Connected and Automated Vehicles in Mixed-Traffic Merging Scenarios", *IEEE Transactions on Control Systems Technology*, 2024.

[4] A. Mokhtarian, P. Scheffe, M. Kloock, S. Schäfer, H. Bang, **V.-A. Le**, S. Sankaramangalam Ulhas, J. Betz, S. Wilson, S. Berman, A. Prorok, and B. Alrifaee, "A Survey on Small-Scale Testbeds for Connected and Automated Vehicles and Robot Swarms", *IEEE Robotics and Automation Magazine*, 2024.

[5] A. I. Mahbub, **V.-A. Le**, and A. A. Malikopoulos, "A safety-prioritized receding horizon control framework for platoon formation in a mixed traffic environment", *Automatica*, vol. 155, p. 111 115, 2023.

[6] **V.-A. Le**, L. Nguyen, and T. X. Nghiem, "Multistep Predictions for Adaptive Sampling in Mobile Robotic Sensor Networks Using Proximal ADMM", *IEEE Access*, vol. 10, pp. 64 850–64 861, 2022.

[7] **V.-A. Le**, L. Nguyen, and T. X. Nghiem, "ADMM-Based Adaptive Sampling Strategy for Nonholonomic Mobile Robotic Sensor Networks", *IEEE Sensors Journal*, vol. 21, no. 13, pp. 15 369–15 378, 2021.

[8] **V.-A. Le**, X. H. Le, L. Nguyen, and X. M. Phan, "An efficient adaptive hierarchical sliding mode control strategy using neural networks for 3D overhead cranes", *International Journal of Automation and Computing*, vol. 16, no. 5, pp. 614–627, 2019.

[9] H. X. Le, T. V. Nguyen, **V.-A. Le**, T. A. Phan, N. H. Nguyen, and M. X. Phan, "Adaptive hierarchical sliding mode control using neural network for uncertain 2D overhead crane", *International Journal of Dynamics and Control*, vol. 7, pp. 996–1004, 2019.

[10] A. T. Le, M. C. Hoang, V. T. Pham, C. N. Luong, D. T. Vu, and **V.-A. Le**, "Adaptive neural network sliding mode control of shipboard container cranes considering actuator backlash", *Mechanical Systems and Signal Processing*, vol. 112, pp. 233–250, 2018.

Conference Papers

[1] **V.-A. Le**, B. Chalaki, V. Tadiparthi, H. N. Mahjoub, J. D'Sa, and E. Moradi-Pari, "Social Navigation in Crowded Environments with Model Predictive Control and Deep Learning-Based Human Trajectory Prediction", in *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2024, pp. 4793–4799.

[2] **V.-A. Le**, V. Tadiparthi, B. Chalaki, H. N. Mahjoub, J. D'sa, E. Moradi-Pari, and A. A. Malikopoulos, "Multi-robot cooperative navigation in crowds: A game-theoretic learning-based model predictive control approach", in *2024 IEEE International Conference on Robotics and Automation (ICRA)*, IEEE, 2024, pp. 4834–4840.

[3] **V.-A. Le**, H. M. Wang, G. Orosz, and A. A. Malikopoulos, "Coordination for Connected Automated Vehicles at Merging Roadways in Mixed Traffic Environment", in *2023 62th IEEE Conference on Decision and Control (CDC)*, 2023, pp. 4150–4155.

[4] N. Venkatesh, **V.-A. Le**, A. Dave, and A. A. Malikopoulos, "Connected and Automated Vehicles in Mixed-Traffic: Learning Human Driver Behavior for Effective On-Ramp Merging", in *2023 62th IEEE Conference on Decision and Control (CDC)*, 2023, pp. 92–97.

[5] **V.-A. Le** and A. A. Malikopoulos, "Optimal Weight Adaptation of Model Predictive Control for Connected and Automated Vehicles in Mixed Traffic with Bayesian Optimization", in *2023 American Control Conference (ACC)*, 2023, pp. 1183–1188.

[6] **V.-A. Le** and A. A. Malikopoulos, "A Cooperative Optimal Control Framework for Connected and Automated Vehicles in Mixed Traffic Using Social Value Orientation", in *2022 61th IEEE Conference on Decision and Control (CDC)*, 2022, pp. 6272–6277.

[7] A. M. I. Mahbub, **V.-A. Le**, and A. A. Malikopoulos, "Safety-Aware and Data-Driven Predictive Control for Connected Automated Vehicles at a Mixed Traffic Signalized Intersection", in *10th IFAC International Symposium on Advances in Automotive Control*, IFAC, 2022, pp. 51–56.

[8] **V.-A. Le** and T. X. Nghiem, "Distributed Experiment Design and Control for Multi-agent Systems with Gaussian Processes", in *2021 60th IEEE Conference on Decision and Control (CDC)*, 2021, pp. 2226–2231.

[9] **V.-A. Le** and T. X. Nghiem, "A Receding Horizon Approach for Simultaneous Active Learning and Control using Gaussian Processes", in *2021 IEEE Conference on Control Technology and Applications (CCTA)*, IEEE, 2021, pp. 453–458.

[10] **V.-A. Le**, L. Nguyen, and T. X. Nghiem, "An Efficient Adaptive Sampling Approach for Mobile Robotic Sensor Networks using Proximal ADMM", in *2021 American Control Conference (ACC)*, IEEE, 2021, pp. 1101–1106.

[11] **V.-A. Le** and T. X. Nghiem, "Gaussian Process Based Distributed Model Predictive Control for Multi-agent Systems using Sequential Convex Programming and ADMM", in *2020 IEEE Conference on Control Technology and Applications (CCTA)*, IEEE, 2020, pp. 31–36.

[12] T. X. Nghiem, T.-D. Nguyen, and **V.-A. Le**, "Fast Gaussian Process based Model Predictive Control with Uncertainty Propagation", in *2019 57th Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, IEEE, 2019, pp. 1052–1059.

[13] **V.-A. Le**, X. H. Le, D. T. Vu, V. T. Pham, A. T. Le, and M. C. Hoang, "Designing an adaptive controller for 3D overhead cranes using hierarchical sliding mode and neural network", in *2018 International Conference on System Science and Engineering (ICSSE)*, IEEE, 2018, pp. 1–6.

Preprints

[1] **V.-A. Le**, P. Kounatidis, and A. A. Malikopoulos, "Combining Graph Attention Networks and Distributed Optimization for Multi-Robot Mixed-Integer Convex Programming", (submitted to 2025 64th IEEE Conference on Decision and Control, arXiv preprint arXiv:2503.21548).

Fellowships and Awards

- Aug. 2023: Student Travel Award by IEEE Control Systems Society for the 2023 IEEE Conference on Decision and Control
- Oct. 2022: IEEEXtreme Programming Competition - Global Rank: 949/6373, US Rank: 12/99
- Apr. 2022: Student Travel Awards by the University of Delaware's Graduate College and IEEE Control Systems Society for the 2022 American Control Conference
- Sep. 2021: Student Travel Award by IEEE Control Systems Society for the 2021 IEEE Conference on Decision and Control
- Jun. 2021: Student Travel Award by IEEE Control Systems Society for the 2021 IEEE Conference on Control Technology and Applications
- Aug. 2020: Student Travel Award by IEEE Control Systems Society for the 2020 IEEE Conference on Control Technology and Applications
- Aug. 2019: Northern Arizona University's Presidential Fellowship
- Aug. 2018: Odon Vallet's Scholarship (established by Prof. Odon Vallet from Sorbonne University) for undergraduate students
- Jun. 2018: Conference Travel Award by Vietnam's National Foundation for Science and Technology Development (NAFOSTED) for the 2018 IEEE International Conference on System Science and Engineering
- Apr. 2015: Gold Medal in the 2015 Vietnam's National Mathematical Olympiad for undergraduate students

Skills

- *Theoretical knowledge*: Model Predictive Control, Optimal Control, Optimization Algorithms, Gaussian Process, Bayesian Optimization, Graph Neural Networks, Distributed Computing
- *Programming languages*: Python, Julia, C/C++, MATLAB
- *Software/Tools*:
  - General: Git, LaTeX, Docker

- Robotics/Control: Robot Operating Systems (ROS), Labview
- Optimization/Optimal Control: CVXOPT, JuMP.jl, Yalmip, CasADi, Gurobi
- Machine Learning: PyTorch, Flux.jl
- Traffic Simulators: VISSIM, SUMO

Academic Activities

- *Membership*
  - Student Member, Institute of Electrical and Electronics Engineers (IEEE) 2020–Present
  - Student Member, IEEE Control System Society 2020–Present
  - Student Member, IEEE Intelligent Transportation Systems Society 2022–Present
  - Student Member, IEEE Robotics and Automation Society 2022–Present
  - Member, IEEE-CSS Technical Committee on Smart Cities 2022–Present
  - Member, IEEE-CSS Technical Committee on Automotive Controls 2024–Present
- *Reviewer*
  - Journals: Automatica, IEEE Transactions on Automatic Control; IEEE Transactions on Intelligent Transportation Systems; Transportation Research Part C: Emerging Technologies; IEEE/ASME Transactions on Mechatronics; IEEE Transactions on Robotics; IEEE Control Systems Letters; Journal of the Franklin Institute; IEEE Transactions on Control Systems Technology; IEEE Transactions on Vehicular Technology; IEEE Transactions on Intelligent Vehicles, IEEE Open Journal of Control Systems
  - Conferences: IEEE Conference on Control Theory and Applications; IEEE Conference on Decision and Control; American Control Conference; European Control Conference; IEEE International Conference on Intelligent Transportation Systems; IEEE/RSJ International Conference on Intelligent Robots and Systems; IEEE Intelligent Vehicles Symposium; Modeling, Estimation and Control Conference