Viet-Anh Le

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Research Interest

- Model Predictive Control
- Learning for Dynamics and Control
- Distributed Optimization
- Multi-Agent Systems
- Robotics and Autonomous Driving
- Human-Autonomy Interaction

Education

University of Delaware — Newark, DE USA
Ph.D. in Mechanical Engineering, GPA: 4.00/4.00 (as of Sep. 2022) — Aug. 2021–Present
Advisor: Dr. Andreas Malikopoulos, Associate Professor, Department of Mechanical Engineering

Northern Arizona University — Flagstaff, AZ USA
M.Sc. in Informatics, GPA: 4.00/4.00 — Aug. 2019–May 2021
Advisor: Dr. Truong X. Nghiem, Assistant Professor, School of Informatics, Computing, and Cyber Systems

Hanoi University of Science and Technology — Hanoi, Vietnam
B.Sc. in Control Engineering and Automation (Talented Program[1]), GPA: 3.44/4.00 — Aug. 2014–Jun. 2019

Professional Experience

University of Delaware — Newark, DE USA
Graduate Research Assistant at Information and Decision Science Laboratory — Aug. 2021–Present

- Learning and Control for Connected and Automated Vehicles in Mixed Traffic

University of Delaware — Newark, DE USA
Graduate Teaching Assistant at Department of Mechanical Engineering — Aug. 2021–Present

- Vibration and Control (Lab) - MEEG 312 - Fall 2021
- Dynamics - MEEG 211 - Spring 2022

Northern Arizona University — Flagstaff, AZ USA
Graduate Research Assistant at Intelligent Control System Laboratory — 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 at 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] A. M. I. Mahbub, **V.-A. Le**, and A. A. Malikopoulos, "Safety-Prioritized Receding Horizon Control Framework for Platoon Formation in a Mixed Traffic Environment", (in review, arXiv preprint arXiv:2205.10673).

[2] **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.

[1] An undergraduate program for approximately top 100 students in five majors

[3] **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.

[4] **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.

[5] X. H. Le, **V.-A. Le**, and L. Nguyen, "Adaptive fuzzy observer based hierarchical sliding mode control for uncertain 2D overhead cranes", *Cyber-Physical Systems*, vol. 5, no. 3, pp. 191–208, 2019.

[6] 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** 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)*, (accepted, arXiv preprint arXiv:2210.00700).

[2] **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.

[3] 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.

[4] **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.

[5] **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.

[6] **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.

[7] **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.

[8] 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.

[9] **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.

Fellowships and Awards

- Apr. 2022: Student Travel Awards by 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

Technical Skills

- *Programming languages*: Python, Julia, C/C++, MATLAB/Octave.
- *Software/Tools*:
  - General: Git, LaTeX.
  - Robotics/Control: Robot Operating Systems (ROS), Labview.
  - Optimization/Optimal Control: CVXOPT, JuMP, Yalmip, CasADi, acados.
  - Machine Learning: PyTorch, Flux.
  - Robotic platforms: IDS's Scaled Smart City, Crazyswarm, F1/10 Racing Car.

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 Computer Society 2022–Present
  - Student Member, IEEE Intelligent Transportation Systems Society 2022–Present
  - Student Member, IEEE Robotics and Automation Society 2022–Present
  - Member, IEEE Technical Committee on Smart Cities 2022–Present
- *Reviewer*
  - Automatica
  - IEEE Transactions on Automatic Control
  - Transportation Research Part C: Emerging Technologies
  - Transactions on Mechatronics
  - IEEE Conference on Control Theory and Applications (CCTA)
  - IEEE Conference on Decision and Control (CDC)
  - American Control Conference (ACC)