Chuong Le | Robotics Engineer

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Education

Doctor of Philosophy of Computer Science and Engineering (CSE) *Ongoing*

University of Nevada, Reno (UNR)

DoD SMART Scholarship (8% awarded rate), IROS 2022 Best Application Award Finalist

Bachelor of Computer Science and Engineering *2017 - 2021*

University of Oklahoma (OU)

Ernest W. Reynolds Endowed Scholarship, Eagle Scout, 1st place B.E.S.T. Robotic Award & Robotic competition

Experience

DoD SMART Scholar - U.S. Army Corps of Engineers Research and Development Center *Aug 2024 - Present*

- Design a multi-sensor inspection platform, calibrate and align vision cameras and LiDAR, and combine them with sensor fusion to improve CAIS.

Research Assistant - Advanced Robotics and Automation Lab (ARA Lab) *Jan 2022 - Present*

- Develop a light-weight deep CNN for real-time rebar[J1], steel defect [C3], and spalling [C4] detection.
- Developed CAIS: Culvert Autonomous Inspection Robotic System. [C7]

CSE Research Intern - U.S. Army Corps of Engineers Research and Development Center *Summer 2023, 2024*

- Implement a multi-camera auto-adjustment ROS driver for 3D mapping and inspection on the Dambot.
- Node optimize light brightness, shutter speed, gain, light level for high quality camera image has a vignette correction filter [6].

Teaching - University of Nevada, Reno *Jan. 2022 - Jun. 2023*

- CPE470/670: Autonomous Mobile Robots. Spring 2022. **TA** || CPE201: Digital Design. Fall 2022. **TA** || CS202: Computer Science II. Spring 2023. **TA** || CS455/655:Mobile Sensor Networks. Spring 2024. **Instructor**

Student Researcher - ARA Lab *Winter 2019*

- Helped build and calculate a steel inspection robot, able to traverse through steel surfaces with Solidworks.
- Create a control system with differential wheel inverse kinematic for the robot with Arduino and ROS [C2].

Research Education for Undergraduates (REU) Student - ARA Lab *Summer 2018, 2019*

- Developed a centralized dirt-driven multi-robotic system for full coverage cleaning with A* planner, SLAM Lidar, and ROS [C1].

Publications

Conferences:

[C8] **C. P. Le*** et al. *MS-CAIS: Multi-Sensor Culvert Autonomous Inspection Robotic System.* **2025 IROS.** Hangzhou, China. (Submitted)

[C7] **C. P. Le*** et al. *CAIS: Culvert Autonomous Inspection Robotic System.* **2024 IROS.** Abu Dhabi, UAE.

[C6] A. Nguyen, **C. P. Le***, P. Walunj, T. N. Do, A. Netchaev, H. La. *A Multi-model Fusion of LiDAR-inertial Odometry via Localization and Mapping.* **2024 IROS.** Abu Dhabi, UAE.

[C5] **C. P. Le*** et al. *A Real-time Multi-Camera Auto-Adjustment Framework for Infrastructure Inspections.* **2024 SII.** Ha Long, Vietnam.

[C4] T. Yasmin, **C. P. Le***, H. M. La. *Deep Architecture Based Spalling Severity Detection System Using Encoder-Decoder Networks.* **2022 ISVC**. San Diego, CA, USA.

[C3] H. Ahmed, S. Nguyen, D. La, **C. P. Le***, H. M. La. *Multi-Directional Bicycle Robot for Bridge Inspection with Steel Defect Detection System*. **2022 IROS**. Kyoto, Japan. (**Best Application Award Finalist**).

[C2] H-D. Bui, S. T. Nguyen, U-H. Billah, **C. Le***, A. Tavakkoli, H. M. La. *Control Framework for a Hybrid-steel Bridge Inspection Robot*. **2020 IROS**. Las Vegas, Nevada. USA.

[C1] **C. Le*** et al. *A Multi-Robotic System for Environmental Dirt Cleaning*. **2020 SII**. Honolulu, Hawaii, USA.

Journals:

[J1] H. Ahmed, **C. P. Le***, H. M. La. *Pixel-level classification for bridge deck rebar detection and localization using a multi-stage deep encoder-decoder network.* **Developments in the Built Environment.** Elsevier Vol. 14. 2023.

Projects

Multi-Agent Flocking Formation Control

- Implemented a mobile sensoring network in Quasi-Lattice formation with dynamic/static target while the multi-robot formation avoids obstacles. Implemented from this paper. *Contact for code. Unavailable to the public due to it being a class project.*

Technical Strengths (w/ Project Links)

- **Relevant Course Work:** RL, AI, Machine Learning, Deep Learning, Data Structure, Database Management
- **Programming Languages:** C++, Python, Java, Matlab, Javascript, HTML, CSS, SQL, R
- **Development:** Linux, Git, Robotics/ROS, Pytorch/Tensorflow, CAD (Solidworks/Inventor), Embedded System, LaTeX
- **Others Relevant:** Green Belt Six Sigma Certified, Conversational Vietnamese

Volunteer

Consumer Electronic Shows (CES) - USDOT Exhibitor *Jan. 5-8 2020*

- Showcased ARA Lab's different Steel Bridge Inspection Robots
- Highlighting how these inspection robots will help the DOT improve the precision and accuracy of bridge damage reports.

Mentor - FIRST Tech Challenge *Spring 2022*

- Worked with M.A.K.E. and F.I.R.S.T. Nevada to create a robot team at Hug High School due to its lack of resources to offer hands-on STEM opportunity and guide students to build and program a robot for competition

Teaching Volunteer - Technology Education and Literacy in Schools (TEALS) *Fall 2021*

- Helped high school teachers teach CS classes 3 times a week.
- Tracked the student's progress and planned upcoming lessons using the curriculum developed by Carnegie Mellon University