# Chuong Le | CSE

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## Education

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

University of Nevada, Reno (UNR)

*SMART Scholar, 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

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

- 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].

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

- Develop a light-weight deep CNN for real-time rebar, steel defect [3], and spalling [4] detection.
- Design and build CAIS: Culvert Autonomous Inspection Robotic System.

**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 [1].

**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 [2].

## Publications

[6] **C. P. Le***, H. M. La. *A Real-time Multi-Camera Auto-Adjustment Framework for Infrastructure Inspections.* **2024 SII.** Jan 8-12, 2024. Hawaii, USA.

[5] 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.

[4] T. Yasmin, **C. P. Le***, H. M. La. *Deep Architecture Based Spalling Severity Detection System Using Encoder-Decoder Networks.* **17th International Symposium on Visual Computing**. Oct 3-5, 2022. San Diego, CA, USA.

[3] 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**. Oct 23–27, 2022. Kyoto, Japan. (**Best Application Award Finalist**).

[2] 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**. Oct 25 – 29, 2020. Las Vegas, Nevada. USA.

[1] **C. Le***, A. Q. Pham, H. M. La, D. Feil-Seifer. *A Multi-Robotic System for Environmental Dirt Cleaning*. **2020 SII**. Jan 12-15, 2020. Hawaii, USA.

## Projects

**Culvert Inspection Robot**

- Design and implemented CAIS: Culvert Autonomous Inspection Robotic System equipped with visual and NDE's electrical resistivity (ER) sensors for a comprehensive culvert condition assessment. The system produces a 3D map highlighting defects (i.e. cracks and spalls) and an ER condition map highlighting corrosion. (Submitted to **IROS 2025**) [Paper] [Code]

**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:** AI, Machine Learning, Deep Learning, Data Structure, Database
- **Programming Languages:** C++, Python, Java, Matlab, Javascript, HTML, CSS, SQL, R
- **Development:** Linux, Git, Robotics/ROS, Pytorch, Tensorflow, SolidWorks(CAD), Arduino, Embedded System, LaTeX
- **Others Relevant:** Green Belt Six Sigma Certified, Microsoft Office, 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