

Job Description

Computer Vision for Smart Structure Laboratory (CVIIS) at the University of Waterloo, led by Dr. Chul Min Yeum, invites applications for graduate studies (Direct Ph.D., Ph.D., Postdoc) in Civil and Environmental Engineering. Our lab advances application-driven research by integrating computer vision, artificial intelligence, and robotic systems to strengthen the safety, resilience, and adaptability of infrastructure. The position will focus on the development of advanced robotic platforms, with particular emphasis on unmanned aerial vehicles (UAVs) and unmanned ground vehicles (UGVs). Candidates will work on robotic hardware design, sensor integration, navigation and control algorithms, and autonomy in real-world environments, with additional scope in human–robot interaction for teleoperation, collaboration, and intelligent decision-making in complex field applications.

Qualification

Requirements

- Bachelor's, Master's, or Ph.D. degrees in Civil Engineering, Computer Science, Electrical, Mechanical, Mechatronics, Robotics Engineering, or a related discipline
- Proven expertise in robotics development with emphasis on UAV and UGV systems
- Experience with navigation, control, and autonomy algorithms
- Familiarity with flight control platforms (PX4, ArduPilot) and perception/navigation stacks
- Proficiency with Robot Operating System (ROS 1/2)
- Experience with sensors such as cameras (RGB, stereo, depth), LiDAR, IMU, GNSS, and standard interfaces (USB, MIPI, GigE, Ethernet, UART)
- Knowledge of computer vision, SLAM, multiview geometry, and sensor fusion
- Strong programming skills in Python, C++, C, or C#
- Excellent communication skills in English

Preferred Qualifications

- Publications in robotics, computer vision, or structural health monitoring
- Experience with GPU-accelerated vision algorithms, RTOS, or AR/VR development (e.g., Unity)
- Expertise in multi-sensor integration and data synchronization
- Familiarity with video streaming protocols (WebRTC, RTSP/RTMP, HTTP)
- Practical experience piloting UAVs or operating UGVs
- Proficiency with Git and collaborative development workflows

Duties and responsibilities

- Coordinating research projects and delivering outputs.
- Disseminating results through scientific publications and conference presentations.
- Communicating and working with industries and stakeholders in government.
- Participating in research proposal drafting and project deliverables.
- Assisting in the organization of relevant workshops and demos.

Application

All qualified individuals are encouraged to apply for this position. The candidates should send a detailed CV to Dr. Yeum (cmyeum@uwaterloo.ca) with the email subject “Position Application”. Before applying to the position, please review the current research in our lab (<https://cviss.net>). Dr. Yeum may ask for additional information from the candidates.

Dr. Yeum will review the applications and contact candidates who meet the criteria to arrange interviews. If you do not hear from us, it means your application did not progress to the interview stage. Selected candidates will have the opportunity to start the program in Spring 2026 or Fall 2026.

If you are passionate about applying the newest computer vision technologies to solve impactful civil engineering problems and want the opportunity to collaborate with leading industry partners, apply to our lab today!



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