Job Description

Computer Vision for Smart Structure Laboratory (https://cviss.net) in Civil and Environment Engineering at the University of Waterloo, led by Dr. Chul Min Yeum, is accepting applications for graduate study (MASc, Direct Ph.D., Ph.D., Postdoc). Graduate students will engage in research driven by practical applications, harnessing state-of-the-art technologies to infuse intelligence into the physical built environment. This endeavor aims to enhance the safety and resilience of infrastructure, ensuring its ability to withstand and adapt to challenges. A key research objective for the position is designing, optimizing, and deploying 2D and 3D processing solutions that extract meaningful insights from visual data. Students will collaborate with a interdisciplinary team of engineers and researchers to deliver cutting-edge solutions that drive innovation in our field. Students who have experience or knowledge of deep learning and Multiview geometry are encouraged to apply for this position.

Qualification

Requirements

- An undergraduate, MASc, or Ph.D. degree in Civil Engineering, Computer Science, Software Engineering, Systems Engineering, or related fields.
- Strong machine learning and deep learning development skills (PyTorch or TensorFlow).
- Solid knowledge of computer vision fundamentals, including multiview geometry, 3D reconstruction, and SLAM.
- Experience with semantic perception tasks such as 2D/3D object detection, segmentation, and scene understanding.
- Experience processing multimodal visual data (images, video, depth maps, LiDAR, and point clouds).
- Proficiency in English, both spoken and written.

Preferred qualifications

- Experience with Vision Transformers (ViT), transformer-based perception models, or foundation models for vision**.**
- Experience with Vision–Language Models (VLMs) or multimodal learning (e.g., CLIP, SAM, LLaVA, GPT-vision, or similar).
- Familiarity with state-of-the-art 2D/3D deep learning frameworks (e.g., NeRF/3DGS, point cloud networks, diffusion or generative models).
- GPU-accelerated training and large-scale model optimization (CUDA, distributed training, mixed precision).
- Experience deploying AI systems in real-world or edge environments.
- Experience with optical/depth sensors (RGB-D, LiDAR, drones, robotics platforms) and data acquisition hardware.
- Software engineering and system integration skills (Docker/Kubernetes, WebRTC/WebSockets, JS/TS, SQL, cloud or edge deployment).
- Track record of publications in computer vision, multimodal AI, robotics, or structural health monitoring.

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!