

SHUN-HSIANG HSU (PhD @ UIUC)

Computer Vision | 3D Reconstruction | Synthetic Data | Synthetic Data

hsus2@illinois.edu | 217-979-3580 | github.com/huhuman | scholar.google.com/ZuBSYdw

Professional Experience

Reconstruct Inc. *Computer Vision Engineer Intern* Champaign, IL (Hybrid) | **Jan. 2023 – Present**

- Benchmarked SOTA 3D reconstruction, improving reconstruction completeness and reducing runtime, then integrated results into production vision engine
- Built a large-scale image-matching benchmark and human-in-the-loop protocol to compare DISK/ ALIKED/ LightGlue/ SuperPoint under low-texture/illumination shifts; improved match robustness in deployment scenarios.
- Trained object-specific defect recognizers, extending a universal object search tool to structural defects; investigated depth estimation/completion to stabilize dense MVS under sparse/noisy views.

NCREE–NTUCE Joint AI Research Center *Research Assistant* Taipei, Taiwan | **May 2020 – Jul. 2022**

- Led 6 industry projects from proposal to deployment for building/tunnel/bridge inspection; coordinated research-to-field handoff with public and private stakeholders.
- Developed and deployed deep learning models for defect detection (cracks, spalling, exposed rebar), increasing inspection throughput and enabling near real-time reporting.
- Mentored students; aligned technical milestones to partner needs at a top consulting firm to shape digital inspection strategy.

TryTech Co., Ltd. *Founder* Taipei, Taiwan | **Jan. 2021 – Present**

- Prototyped AR + deep learning solutions for structural health monitoring and post-disaster assessment; shipped iOS/web pilots with the industry partners.
- Awards: Merit Award, 5G Innovative Application Competition; Honorable Mention, Civil IoT Taiwan Data Application Contest.

Education

University of Illinois Urbana-Champaign (UIUC) **Aug. 2022 – Present**
Ph.D. in Construction Engineering and Management (GPA: 4.0) **(Expected 2027)**

- Research: Computer Vision, Deep Learning, Synthetic Data Generation for Automation in Construction.
- Teaching Assistant: *Construction Engineering* (F23, Sp24, F24, Sp25, F25).
- Awards: Government Fellowship for Studying Abroad (2024–2026); Taiwan UIUC Scholarship (1st-ranked; declined).

Master of Computer Science (GPA: 4.0) **Aug. 2022 – Dec. 2024**

- Emphasis: Computer Vision, Machine Learning, 3D Reconstruction, AI Systems; TA: Computer Vision (Sp24).

Publications

*Jung, Y., *Cho, I., ***Hsu, S. H.**, & Golparvar-Fard, M. (2024). VisualSiteDiary: A detector-free Vision-Language Transformer model for captioning photologs for daily construction reporting and image retrievals. *Automation in Construction*, 165, 105483. (*Equally contributed)

Hsu, S. H., Fu, J., & Golparvar-Fard, M. (2024). VL-Con: Vision-Language Dataset for Deep Learning-based Construction Monitoring Applications. In ISARC. Proceedings of the International Symposium on Automation and Robotics in Construction (Vol. 41, pp. 1128-1135). IAARC Publications.

Hsu, S. H., & Golparvar-Fard, M. (2024). Requirements for Parametric Design of Physics-Based Synthetic Data Generation for Learning and Inference of Defect Conditions. In Construction Research Congress 2024 (pp. 436-445).

Hsu, S. H., Hung, H. T., Lin, Y. Q., & Chang, C. M. (2023). Defect inspection of indoor components in buildings using deep learning object detection and augmented reality. *Earthquake Engineering and Engineering Vibration*, 22(1), 41-54.

Hsu, S. H., Chang, T. W., & Chang, C. M. (2022). Impacts of label quality on performance of steel fatigue crack recognition using deep learning-based image segmentation. *Smart Structures and Systems*, 29(1), 207-220.

Technical Skills

PyTorch, Python, C++17, CUDA (kernels/basic), OpenCV, COLMAP, 3DGS/MVS, Docker, Git, Linux, AWS