Mengjun Wang

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Research interests

Computer-aided civil engineering, Construction robotics, Smart building, Ground penetrating Radar (GPR) sensing

Education

University of Tennessee — Knoxville, TN
PhD in Civil Engineering — 08 2021 – Present
Mentor: Dr. Shuai Li. — *GPA: 3.88/4.0.*

Changsha Unversity of Science and Technology — Changsha, China
BA in Traffic Engineering — 09 2016 – 06 2020
Mentors: Dr. Kejun Long, Dr. Zhengwu Wang. — *GPA: 3.68/4.0 (1/73).*

Honors and scholarships

Graduate Student Senate Travel Award	2024
Graduate Top-off Fellowship	2023
Honor Graduates in Hunan Province, China	2020
Merit Student	2016-2020
National Encouragement Scholarship	2016-2020
The First Prize Scholarship	2016-2020

Publications

Underground Infrastructure Detection and Localization Using Deep Learning Enabled Radargram Inversion and Vision-based Mapping
Mengjun Wang, Da Hu, Junjie Chen, Shuai Li*
Automation in Construction, 2023

Object Detection in Hospital Facilities: A Comprehensive Dataset and Performance Evaluation
Da Hu, Shuai Li*, Mengjun Wang.
Engineering Applications of Artificial Intelligence, 2023

3D Object Detection and Localization within Healthcare Facilities
Da Hu, Mengjun Wang, Shuai Li*
2023 Winter Simulation Conference (WSC), Oral Presentation.

Robotic Assembly of Interlocking Blocks for Construction Based on Large Language Models
Mengjun Wang, Yan Li, Shuai Li*
2024 Construction Research Congress (CRC), Accepted.

Bridge Deck Condition Assessment Using GPR: System Configuration and Defects Characterization
Da Hu, Mengjun Wang, Ruichen Guo, Shuai Li *
2024 Construction Research Congress (CRC), Accepted.

Awareness and Acceptance of Emerging Technology and Quadruped Robots in Dementia Care: A Survey Study
Tyler Morris, Mengjun Wang, Yan Li, Songyan Liu, Shuai Li, Xiaopeng Zhao
AAAI 2023 Fall Symposium Series.

Urban Subsurface Mapping via Deep Learning Based GPR Data Inversion
Mengjun Wang, Da Hu, Jiannan Cai, Shuai Li*.
2022 Winter Simulation Conference (WSC). IEEE, 2022. (Oral Presentation)

Drones and Other Technologies To Assist in Disaster Relief Efforts
Shuai Li, Amirsalar Moslehy, Da Hu, Mengjun Wang, Nicholas Wierschem, Khalid Alshibli, Baoshan Huang.
Tennessee. Department of Transportation, 2022.

License Plate Recognition and Matching Using Neural Networks
Kelvyn Sosoo, David Ouyang, Mengjun Wang (equal contribution)
RECSEM Project Report: jics.utk.edu, 2019.

Easy-Teaching: Teach Robot with Few Task Demonstrations
Yan Li; Songyang Liu; Mengjun Wang; Shuai Li*, Jindong Tan
Journal of Computing in Civil Engineering, Under Review.

Multi-classifier information fusion for human activity recognition in healthcare facilities
Da Hu; Mengjun Wang; Shuai Li*
Engineering Applications of Artificial Intelligence, Under Review.

An Audio-Based Emotion Monitoring System for Enhancing Construction Worker Safety and Mental Health
Mengjun Wang; Xiande Zhang, Shuai Li*, Jiannan Cai, Yuqin Hu
ASCE International Conference on Computing in Civil Engineering, Under Review.

Research experience

FW-HTF-R/Collaborative Research: FAIR4WISE: Future AI and Robotics for Women in Smart Engineering
Mentors: Dr. Shuai Li Sponsor: NSF 2222810 09 2022 – present

This research will develop a new robot teleoperation method based on deep learning and blockchain certification to augment construction workers' capability and promote diversity, equity, and inclusiveness in the workplace. Considering the human factors especially the gender difference to augment gender-related diversity and workers' performance. Mainly contributing to the robot teleoperation system design and implementation. Project description page.

CRII: CPS: Modeling Subsurface Features and Connected Autonomous Vehicles as Cyber-Physical Systems for Reciprocal Mapping and Localization

Mentors: Dr. Shuai Li Sponsor: NSF 1850008 09 2021 – 05 2022

This project proposed automated tools that make better maps of urban subsurface to improve buried infrastructure and prevent accidents when digging is required; as well as create a new means to navigate autonomous vehicles in cluttered and distressed urban areas during and after natural or man-made disasters. Contributed to the simulated data generation of underground GPR radargram and corresponding labels. Meanwhile, developed the underground pipeline detection model and aboveground 3D reconstruction part. Designed and implemented the validation experiments. Project description page.

Drones and Other Technologies to Assist in Disaster Relief Efforts

Mentors: Dr. Shuai Li Sponsor: TDOT 08 2021 – 05 2022

This research proposed a framework based on 3D reconstruction, deep learning, and optimization to process drone-acquired data and drone mission planning, which can be applied in various disaster scenarios. Mainly contributed to reference management, scene exploration, and report documentation. Project description page.

Summer Research Experiences for Undergraduates (REU) - RECSEM REU

Mentors: Dr. Kwai Wong, Dr. Lee D Han Sponsor: NSF 05 2019 – 08 2019

This project aims to direct undergraduate students to explore computational science models and techniques via a number of cohesive compute and data-intensive applications. Mainly contributed to the license plate recognition and matching project in the data matching part. Match the recognized car plate number in different highway cameras to extract specific cars' speed and route information. Project description page.

Teaching experience

Teaching Assistant, Department of CEE (UTK) Spring 2022

CE 441/448: (Honors) Construction Engineering and Management II

Mainly take the homework, and exams grading responsibility.

Teaching Assistant, Department of CEE (UTK) Fall 2021

CE 210: Geomatics

Mainly take the homework, lab reports, and exams grading responsibility.

Lecturer, Zhongwan Primary School (China) 2020.08 - 2021.08
Mathematics, English, Chinese
Mainly give lectures and manage the fifth-grade students. Earned a middle-school level teaching certificate issued by the China Educational Ministry.

Talks and tutorials

3D Object Detection and Localization within Healthcare Facilities 12 2023
2023 Winter Simulation Conference (WSC), San Antonio, TX, paper presentation

Urban Subsurface Mapping via Deep Learning Based GPR Data Inversion 12 2022
2022 Winter Simulation Conference (WSC), Singapore, paper presentation

An Integrated Subsurface Mapping and Localization System 09 2022
ISSE Annual Research Conference, UT Conference Center, poster presentation

Reviewer

ASCE I3CE 2024
Reviewed one conference paper

Skills

Programming
Proficient in: python.
Familiar with: Matlab, C.

Languages
English (fluent).
Chinese (advanced)