Automation in Construction and Buildings (Code: 3a327)

Goal:

The construction industry is one of the most important economic sectors with spending of 9-15% of GDP in most countries. However, the construction industry is increasingly facing challenges such as low productivity and inefficiency, high safety risk, and workforce shortages. Compared with other industrial sectors with steadily increased productivity, productivity and work safety in construction industry have barely improved. Automation technologies such as robotics, 3D printing, artificial intelligence (AI) and machine learning, wearable sensors and devices, etc. have demonstrated promising potentials to improve productivity, enhance worker safety and health, and address labor shortages. These challenges and opportunities have significantly expanded the scopes of traditional automation science and engineering. In order to increase the visibility and impact, and highlight the work responding to the above-mentioned challenges, the goal of this special session is to bring together the recent research advances and achievements in automation in construction and building from academics and practitioners.

Topics:

- 3D printing and robotic printing for construction
- Robotics for building and construction
- Augmented, virtual, and mixed reality (AR/VR/MR) for construction and building
- Building information modeling (BIM)
- Wearable sensors and assistive devices for construction workers
- Robotic perception, motion planning and navigation methods in construction and building
- AI and machine learning methods and applications for construction
- Safe human-robot collaboration in construction tasks
- Automation in construction logistics and scheduling
- Collaborative automation technology for heavy construction equipment

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