



UNSW
SYDNEY



Construction Automation Laboratory

Centre for Infrastructure, Engineering & Safety (CIES) is internationally renowned for excellence in experimental, theoretical and applied research. Our aim is to make infrastructure safer, more reliable, sustainable, and cost effective. Our Construction Automation Laboratory led by Churchill Fellow Dr Ali Kashani will be used to fundamentally research, develop, refine, and systematically evaluate automated construction techniques for increased collaboration with industry.

Competitive advantage

- Long history of working successfully with industry partners, leading to rapid technology transfer
- Award-winning researchers recognised globally as leaders in their field
- State-of-art facilities for prototyping and testing with strong knowledge base

Impact

- The Australian construction industry is lagging behind in adoption of digital construction compared to the developed countries, but this situation can be changed through R&D, collaborative projects, and partnership between research institutes and industries
- CIES intends to play an important role in construction automation not only in Australia but also internationally by fulfilling the need for a research facility to implement collaborative robots for construction This research facility will be used for construction automation process including 3D printing, modular automated construction and structural assembly, shotcreting, and automated bricklaying
- The research projects aim for increased construction productivity, sustainable and low-carbon construction, disaster-relief and affordable accommodation

Capabilities and facilities

The state-of-the-art research facility will enable new methods of digital 3D printing by addressing the reinforcement issue and other main challenges of construction 3D printing. Equipment includes:

- Two ABB IRB6700 robots with payload of 200 kg and reach of 2.6 m
- Four vacuum cups and three 2-finger grippers for picking and placing of a range of objects from rebar to timber frames and studs, bricks, and aerated concrete blocks
- Concrete mixer-pump for mixing dry powders with water and delivery of up to 10 m
- Special-designed nozzle for 3D printing of both one-part and multiple-parts mortars

More Information

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