



Editorial

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Robotic systems are distinguished by their versatility. Like computers, they are suitable for a wide variety of tasks because they are “generic” and therefore not tailored to any particular application. As such, the “manual dexterity” of robots can be freely designed and programmed, and their manipulation skills can be customised to suit a specific intention. It is precisely this versatility that distinguishes robotic systems from other specialised machinery, unlocking new avenues of construction, and, at the same time, involving architects, civil and process engineers, and roboticists to collaborate and dissolving traditional disciplinary boundaries. In order to exploit this potential, not only a technical grasp of robotics, and, with that, an in-depth understanding of computation, materials and construction is required, but also supplementary pathways and platforms to exchange and to open new scientific frontiers.

This special issue of *Construction Robotics* facilitates this understanding by encouraging novel methods and applications in robotics, architecture and civil engineering. It ventures to take a look forward and gathers exceptional, rigorous approaches from the rapidly growing Robots in Architecture community. Specifically, it discusses a range of constructive topics that include, for example, novel material processes for robotic fabrication, including thermally tuned concrete panel printing, digitally controlled concrete injection processes, and the robotic manipulation of filament material in space. This is complemented by contributions that explore haptic programming techniques, and automatic sequence and

motion planning methods. Moreover, the special issue also addresses the transfer of robotics to larger scales of construction, involving tubular composite fabrication with the aid of robotic swarms, and the realisation of topology-optimized concrete structures using abrasive techniques.

On that scope, the special issue aims at bringing forward ground-breaking approaches to robotic construction from most advanced research labs in the world, all while boosting interdisciplinary fertilization, creative capacity and the science of robotic construction. Therefore, the featured contributions are not only substantially advancing state-of-the-art methods and techniques but are also fostering the fast pace of exploration, exchange and knowledge transfer in this community. This is documented—for the first time—through supplementary video material to the articles, which is available on the *Construction Robotics* website.

Ultimately, this special issue would not have been possible without the extraordinary work and commitment of the authors, but also the reviewers and the whole editorial team. Therefore, my sincere appreciation goes out to them, as well as to Springer Engineering for the generous support in editing and publishing this scientific journal.

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