Proceedings of the 1ˢᵗ Future of Construction Workshop at the International Conference on Robotics and Automation (ICRA 2022)

Future of Construction: Build Faster, Better, Safer - Together with Robots

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Introduction

The $10 trillion global construction industry has traditionally been a labor-intensive industry, yet it stands to benefit from autonomous robots that promise to deliver construction work that is more accurate and efficient compared to manual or conventional methods. However, the integration of automation and robotic technology into the construction workplace is faced with significant barriers including high cost of entry, safety concerns, inadequate training and knowledge about robotics, and poor performance of robots in dynamic, cluttered and unpredictable environments such as construction sites.

To tackle these challenging issues, this workshop aims to facilitate discussion on technology that will enable advanced robotics for future construction workplaces with an emphasis on robust perception and navigation methods, learning-based task and motion planning, and safety-focused robot-worker interactions. In line with the ICRA 2022 Future of Work theme, this workshop provides a venue for academics and industry practitioners to create a vision for robotics in construction work and ensure equitable participation in planning for the future of construction workplaces. The half-day workshop features presentations by distinguished speakers from both industry and academia as well as interactive activities in the form of poster sessions, debates, and guided group discussions.

On May 23, 2022, the workshop was held as a hybrid event, with in-person activities as well as a synchronous Zoom session. The workshop solicited contributed papers in the form of extended abstracts (no longer than 4 pages in ICRA paper format, including references) from researchers that are working in construction robotics or closely related fields. The submitted papers were individually reviewed by the organizing committee. 20 papers were accepted in total, of which 16 are first-time publications and are included in these proceedings. The authors of accepted papers were invited to present their research at the poster session during the workshop. In addition, the video presentations of each paper are archived at our website: https://construction-robots.github.io.

We sincerely thank the speakers, authors, event hosts and everyone who has participated in this workshop. We hope that this effort will greatly contribute to the further advancement of construction robotics.

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