

Session 1C. Robotics, Automation, and Control I
Moderator: Shih-Chung Kang (National Taiwan University)

- 15:00** #135. 4D-BIM based Optimal Flight Planning for Construction Monitoring Applications using Camera-equipped UAVs
Amir Ibrahim and Mani Golparvar-Fard
- 15:15** #99. Semantic Relation Detection Between Construction Entities to Support Safe Human-Robot Collaboration in Construction
Daeho Kim, Ankit Goyal, Alejandro Newell, Sanghyun Lee, Jia Deng and Vineet Kamat
- 15:30** #50. Task Allocation and Route Planning for Robotic Service Networks with Multiple Depots in Indoor Environments
Bharadwaj Mantha and Borja Garcia de Soto
- 15:45** #363. Vision-based Excavator Activity Recognition and Productivity Analysis in Construction
Chen Chen, Zhu Zhenhua, Amin Hammad and Ahmed Walid
- 16:00** #334. The design of future construction lab
Cheng Hsuan Yang, Tzong Hann Wu and Shih-Chung Kang
- 16:15** #455. Digital Twins as the Next Phase of Cyber-Physical Systems in Construction
Congwen Kan and Chimay Anumba
- 16:30** #192. Assessments of Intuition and Efficiency: Remote Control of the Arm of Excavator in Operational Space
Dong-Ik Sun, Sang-Keun Lee, Yong-Seok Lee, Sang-Ho Kim, Jun Ueda, Yong K Cho, Yong-Han Ahn and Chang-Soo Han