CALL FOR PAPERS

IEEE Journal of Radio Frequency Identification

Special Issue on
"RFID for Autonomous Facilities: Grand Challenges and Frontiers"

The concept of radio-frequency identification (RFID) as an "auto-ID" to control large-scale logistics has held great promises to bring forth paradigm-shift capabilities in autonomous facilities. However, after nearly 20 years of development, fundamental challenges remain for RFID to be broadly adopted in a large cluttered environment. For example, autonomous just-walk-out retails such as Amazon Go have not employed RFID as part of the inputs, but been presently implemented by multiple cameras, prolific bar code readers, and shelf sensor fusion. Cost scaling in future large autonomous facilities is also unclear to make rational business choices on reliable logistics. To help focus the resolution of technical challenges and sustain the interest of young and experienced engineers, Journal of RFID calls for a special issue on "RFID for Autonomous Facilities: Grand Challenges and Frontiers" in all design levels, which will hopefully expedite the necessary development to enable RFID as a competitive choice for the backbone logistics of large autonomous facilities, such as retails, distribution centers, and assembly factories. Technical advancement, solution techniques, review and analysis of key challenges, design methodology, and market evaluation with a focus on the large autonomous facilities are all welcome.

Topics include, but are not limited to, the following:

- Reliable logistics in large autonomous facilities enabled by RFID
- Advancement on reader and tag technology for autonomous facilities
- Quantitative analysis of RFID failure rates in large cluttered environment
- Antenna design to enable dense tag deployment in cluttered environment
- Global code space resolution
- Cost analysis for large-scale deployment
- Long-term evolution of RFID air protocols for large-scale facilities
- Read failure reduction in random tag placement and in cluttered environment
- Resolution of reader-to-reader collision in large facilities
- Reliable and accurate 3D tag localization
- Read range extension with minimal penalty on collision
- Information security in autonomous facilities

Important Dates:

Submission Deadline: August 1, 2022
Review Due: October 1, 2022
Revision Due: November 15, 2022
First Publication in JRFID: February 1, 2023

Second Submission Due: December 15, 2022
Review Due: February 15, 2023
Revision Due: April 1, 2023
Second Publication in JRFID: July 1, 2023

Submission Guidelines: Authors are requested to electronically submit their original manuscripts through the IEEE Manuscript Central at https://mc.manuscriptcentral.com/jrfid, according to the format described at https://journals.ieeeauthorcenter.ieee.org/. The authors are also requested to select the paper type of "RFID-Challenges" to ensure proper review under this call for papers.

Guest Editors:

Edwin C. Kan, Cornell University
Steward Thomas, Bucknell University
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