Mechatronics and robotics for agriculture, forestry and construction automation

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Abstract

Today, many labor-intensive industries for outdoor work (e.g. forestry, agriculture, construction, etc.) still require a large amount of labor to produce their goods or services, not only in the number of workers but also in the power of every worker. However, in many countries with declining birthrate and aging population, the labor force has been decreasing and aging. In order to reduce the burden of aging workers and recruit more young workers, many labor-saving technologies have been proposed. On the other hand, even with the development of automation and robotics technology, the human is still a central player. The research field of robotics and automation for workers in outdoor environments includes both sensing the human movement and behavior, as well as human assistance for safety and productivity. This workshop will focus on human-centered mechatronics and robotics technologies for such industries, including human motion measurement, wearable assistive devices, intelligent actuators, teleoperation & telemonitoring systems, etc. In this workshop, the attendees will introduce their achievements and exchange their ideas with the audience.

Speakers

- Kazuaki Kishimoto, ATOUN Inc., Japan
Title: Current status and issues of power assist devices which we have been developing or developed

- Hiroshi Kobayashi, Tokyo University of Science, Japan
Title: Passive power assist device for lower back and arm

- Satoki Tsuichihara, Tokyo University of Science, Japan
Title: Farm management system based on weed identification using image segmentation and fertilization proposal using IoT devices

- Minghui Sun, Jilin University, China
Title: Enhancing interaction using electrovibration and vibration haptic feedback

- Ming Ding, Nara Institute of Science and Technology, Japan
Title: Measurement of human motion and plantar load for the evaluation of power assist device

- Changan Jiang, Ritsumei University, Japan
Title: Modelling and control of artificial muscle