

SPECIAL ISSUE ON CYBER-PHYSICAL SYSTEMS (CPS) AND INTERNET OF THINGS (IoT)

PREFACE



From tiny personal wearable sensors to wide-area factory sensing, the Internet of things (IoT) and cyber-physical systems (CPS) are rapidly entering our lives and business. However, in this field, there are still problems to be solved. For example, a “sensor” is something that can translate a physical phenomenon into a numerical value, although there still are many phenomena that cannot be sensed such as the pain felt by humans, for which we have no choice but to wait for the progress of devices. Moreover, even when new sensors are realized, there are many challenges, such as their miniaturization and power supply, when we make them into IoT systems. Furthermore, a wide range of research remains to be carried out, such as the development of mechanisms for collecting IoT and CPS data safely over a wide area and at low cost, and machine learning for analyzing the collected data with high speed and accuracy.

In this special issue, we have many interesting and novel research papers related to the above-mentioned topics. The first three papers are related to intelligent transportation systems. The first paper reports the development of an IoT device that can measure the vibration of a road to count passing cars and also proposes a novel signal processing algorithm. This fusion of hardware and software is a characteristic and important point of IoT systems. The next four papers deal with human activity recognition including its localization. Human activity recognition is a traditional research topic in this field, but research is still ongoing because the target behaviors and available sensors and devices are different for different applications. The final two papers are fundamental research papers related to wireless sensors. Although most of the research on IoT/CPS is targeted at specific applications, basic research such as communication protocols and emulators for evaluation is also important.

Finally, I hope that research in the fields of IoT and CPS will inspire future developments. At the same time, I believe that IoT and CPS will become increasingly widespread in our lives and help lead to a prosperous future society. I would like to thank all the reviewers for their cooperation in the publication of this special issue.

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