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Advances in internet of things and cyber physical systems and its application to smart ship

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The Internet of Things (IoT) also known as Cloud of Things refers to the inter-connection of uniquely identifiable embedded computing like devices within the existing Internet infrastructure. Example: Smart grid, heart monitoring implants, biochip transponders, automobiles with built-in sensors, or field operation devices. It is a network of functional tightly coupled system, using various technologies such as RFID, Zigbee, Bluetooth or 6LoWPAN. The Web of Things (WoT) is an evolution of the Internet of Things. A concept and plan to fully incorporate every-day physical objects into the World Wide Web, allowing us to build an application layer for physical objects. A Cyber-Physical System (CPS) is a globally connected WoT, bring embedded systems to the Web, i.e., aerospace, automotive, chemical processes, civil infrastructure, renewable energy, remote healthcare monitor, automated manufacturing, intelligent transportation, and consumer appliances. Several successful adaptation including collision avoidance; precision (e.g., robotic surgery and nano-level manufacturing); operation in dangerous or inaccessible environments (e.g., search and rescue, firefighting, and deep-sea exploration); coordination (e.g., air traffic control, war fighting). This talk presents new advances in science and engineering that has made improvement on the link between computational and physical elements, particularly in the area of autonomy, efficiency, functionality, reliability, safety, and usability of IoT and CPS. The talk will give a case study, namely a Smart Ship, moving away from manual operation to automated ship warehouse management.

Biography

Elizabeth Chang is a Professor in Logistics and a Canberra Fellow at the University of New South Wales at the Australian Defence Force Academy. She holds BSc, MSc and PhD in Computer Science and Software Engineering and has been CIO/CTO in Multinational Logistics and Transport Company in Hong Kong. She has delivered 41 keynote/plenary speeches largely at major IEEE Conferences and International Conferences. She has published over 500 refereed papers with an H-Index of 35 (Google Scholar). She is a Fellow of IEEE and the Chair for IEEE IES Technical Committee on Industrial Informatics (2014-2015).

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