

Photo**Title of talk**

Current developments on operator based nonlinear control system design of wireless power transfer system

Abstract

Since wireless power transfer (WPT) systems could be used to continuously charge an electronic device and power the batteries without using wires between the transmit side and the receive side, researches on designing reliable and effective WPT control system to achieve desired output tracking and high efficiency have drawn much attention in recent years. However, the challenging issue still exists, because the WPT system should get the desired performance with consideration of its uncertainties and nonlinearities. In order to address the nonlinear and uncertain behaviors, in this talk, operator based models are introduced. As for the compensation on the above dynamics, robust nonlinear control design schemes are shown to guarantee the robust stability, to improve the voltage tracking performance and to obtain optimal equivalent load. For demonstrating the effectiveness, current experimental results are shown by applying the above-mentioned control design to the wireless power transfer system.

Bio

Prof. Mingcong Deng is a Professor of Tokyo University of Agriculture and Technology, Japan. He received his PhD in Systems Science from Kumamoto University, Japan, in 1997. From 1997 to 2000, he was with Kumamoto University as an Assistant Professor. From 2000 to 2001, he was with University of Exeter, UK, and then spent one year at the NTT Communication Science Laboratories. Since the end of 2002 to September of 2010, he worked at Okayama University, where he was an Assistant Professor and then an Associate Professor.

Prof. Deng is a member of SICE, ISCIE, IEICE, JSME, IEEJ and the IEEE(SM). He specializes in three complementary areas: Operator based nonlinear fault detection and fault tolerant control system design; System design on thermoelectric conversion elements; Applications on smart material actuators. Prof. Deng has over 470 publications including 170 journal papers, 15 books (or chapters), in peer reviewed journals including IEEE Transactions, IEEE Press (for books) and other top tier outlets. He serves as a chief editor for International Journal of Advanced Mechatronic Systems, The Global Journal of Technology and Optimization, and associate editors of 6 international journals, including with IEEE journals. Prof. Deng is a co-chair of agricultural robotics and automation technical committee, IEEE Robotics and Automation Society; also a chair of the environmental sensing, networking, and decision making technical committee, IEEE SMC Society. He was the recipient of 2014 Meritorious Services Award of IEEE SMC Society.