

Rethinking Robotics R & D for Real World and Environment-adaptive Robots

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Abstract (<http://www.malab.se.ritsumei.ac.jp/>)

Google's parent company Alphabet continues to scale back its robot ambitions, shutting down Schaft, a little-known Japanese robotics team it purchased in 2013, after it sold Boston Dynamics, a well-known company for its flashy YouTube videos and animal-like robots, to SoftBank. Rethinking Robotics, a pioneer in the development of robots that were emotionally sympathetic, also closed its doors in the last October. What problems for the R & D of robots are not well analyzed, even though the sales of the industrial robots increased by 35% to 381,335 units and the sales of the service robots for personal and domestic use increased by 25% to about 8.5 million units. In this talk, I bring questions – How to enlarge the robot markets and what kind of robots should be emphasized to R & D. As a suggestion, I think that the business model of robotics industry would need to be reconsidered and the problem-solving robotics technologies are highly required in the society. As an example of the R & D of robotics technologies, I will introduce a multilink-articulated robot for inspecting and exploring pipelines, which is composed of by omnidirectional and hemispherical wheels, a pair of the hemispherical wheels attaches at the end of the robot to quickly align the steering direction while the omnidirectional wheels generates enough propelling force forward and backward, to prevent critical leakage accidents. Some other robots developed in our laboratory will be also introduced.

Biography (<http://www.ritsumei.ac.jp/se/~shugen/>)

Professor Shugen Ma received his Ph.D. degrees in Mechanical Engineering Science from Tokyo Institute of Technology in 1991. From 1991 to 1992 he was a Research Engineer with Komatsu Ltd and from 1992 to 1993 he was a Visiting Scholar at the University of California, Riverside. Professor Ma joined the Department of Systems Engineering, Ibaraki University, as an Assistant Professor in July 1993. In October 2005, he moved to Ritsumeikan University, where he is currently a professor in the Department of Robotics. Professor Ma was awarded by the CAS “Hundred Talent Program” in 2001, the Tianjin “Thousand Talents Plan” in 2012, and the national “Thousand Talents Plan” in 2014. He also stayed in Johns Hopkins University as a Visiting Professor in 2014. His current research interests include the design and control of environment-adaptive robots and field robotics.

Professor Shugen Ma is Fellow of IEEE, Fellow of JSME, and General Chairman of IROS 2022 in Japan, respectively. He has co-founded the ROBIO conference and served as the general chair of the first event. Professor Ma also successfully established two start up companies in China with his students, organizing innovative robotics education and training service programs. He was an associate Editor of the IEEE Transaction on Robotics from December 2003 to November 2007, an Editor of Advanced Robotics from April 2007, and serves many societies and conferences.

