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Development of bidirectional MRF based actuators for haptic application

This study focuses on review and proposal of new configurations of bidirectional magneto-rheological actuator (BMRA) for force feedback application. Firstly, an introduction to development of haptic systems based on MR brakes is presented. The disadvantages of MR brake based haptic systems are then analyzed and the necessity for development of BMRA for haptic systems is figured out. After that, several configurations of BMRA including the previously developed and new proposals are introduced. The optimal design of the considered configurations of the BMRA is then conducted and the optimal results are evaluated. Some applications of the BMRA in haptic systems are shown with updated experimental results. In addition, some existing limitations of developed BMRA based haptic systems are shown and future research directions on BMRA based haptic systems are presented.

Biography

Nguyen Quoc Hung was awarded with a PhD degree at Inha University, Korea in 2009, majored in Solid Mechanics and Manufacturing Engineering. He is currently the Dean of Faculty of Engineering at Vietnamese German University (VGU). Prior to this, he worked as the Dean of Mechanical Engineering, Industrial University of Ho Chi Minh. He has written over 100 journal papers (around 50 ISI papers) and three book chapters, delivered more than 30 presentations at international conferences. He is a fellow of Vietnamese Society of Mechanics, Vietnamese Society of Computational Mechanics. He is currently the chairman of scientific committee of Mechanics-Engineering, NAFOSTED (National Foundation for Science and Technology Development, Vietnam). His main research directions include Smart materials and structures, Fluid Mechanics, Structure Optimization, Vibration control, Intelligent Control Systems. He has successfully chaired (principal investigator) 05 projects funded by state organizations.

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