Department of Mechanical Engineering Seminar

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Applications of Compliant Mechanisms

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ABSTRACT

Compliant mechanisms with versatile configurations have applications in robotics, automatic machinery, biology, and medical devices. The compliant mechanisms can be 3 dimensional or less depending on their working scenarios. In this talk, we focus on planar compliant mechanisms composed of linkage type mechanisms and multistable mechanisms. Design concepts and modelling methods will be presented. Mostly, bistability is exploited in my work. I also focus the beam constraint modelling method for proof of concept and feasibility investigation. Possible applications in various fields are open and evolutions of the planar compliant mechanisms with genes from origami mechanisms will be introduced in the talk.

BIO

Dung-An Wang received the B.S. degree with high honors in mechanical engineering from the National Sun-Yet Sen University, Kaohsiung, Taiwan in 1992. He received the M.S. in mechanical engineering from the National Taiwan University, Taipei, Taiwan in 1996 and the Ph.D. degree in mechanical engineering from the University of Michigan at Ann Arbor, United States in 2004. While studying the Ph.D. degree, he joined National Steel, Michigan, United States, working on sheet metal forming. For his graduate work in University of Michigan, he specializing in MEMS, sheet metal forming and plasticity, with a dissertation on plastic and fracture analysis of engineering materials and welded structures. From 2004 to 2005, he worked at Da-Yeh University, ChangHua, Taiwan developing micromachined piezoelectric actuators and friction stir welding technologies. From 2005, he has been with National Chung Hsing University, Taichung, Taiwan, performing R&D on compliant mechanism design, novel ultrasonic horn design, steel leveling, micromachined energy harvesters and CMOS MEMS sensors and actuators. He is presently a distinguished professor in the National Chung Hsing University and a visiting professor in the Industrial University of Ho Chi Minh City, Vietnam. He in an inventor on several patents and has authored or coauthored a number of papers and a book chapter related to failure mechanisms of advanced welding processes.