

**STEVENS INSTITUTE OF TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING**

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Humanlike robots as a platform for biomimetic technologies

Yoseph Bar-Cohen

Senior Research Scientist and Group Supervisor
Jet Propulsion Laboratory/Caltech

Inspired by science fiction, making human-like robots is increasingly becoming an engineering reality thanks to recent surges in technology advances. These robots have originated from the desire to reproduce the human appearance, functions and intelligence and they may become our household appliance or even companion. For this purpose, biologically inspired technologies, also known as biomimetic technologies, are increasingly becoming common tools to support the development of such robots. Such technologies include artificial intelligence, vision, muscles and other forms of nature inspired innovations. Potentially, electroactive polymer (EAP) materials as artificial muscles are offering important actuation capability for making such machines lifelike. There are many technical issues related to making such robots including the need for more effective EAP materials as actuators. As opposed to other human made machines and devices, this technology raises various questions and concerns that need to be addressed. These include the need to prevent accidents, deliberate harm, or their use in crimes. In this seminar the state-of-the-art and the challenges will be reviewed.

Dr. Yoseph Bar-Cohen is a Senior Research Scientist and Group Supervisor at JPL. In his NDEAA lab (<http://ndaaa.jpl.nasa.gov/>) he led to the development of many novel methods and mechanisms. He received his Ph. D. in Physics (1979) from the Hebrew University, Jerusalem, Israel. He (co)authored over 310 publications, has 19-registered patents, he is the Editor and coauthor of 4 books and he chaired/co-chaired 37 international symposia and conferences. He is the initiator of the SPIE Conf. on electroactive polymers (EAP), chairing it since 1999. He challenged wrestling match between an arm driven by EAP and human and held contents in 2005 and 2006. In April 2003, Business Week named him as one of five technology gurus who are "Pushing Tech's Boundaries." His accomplishments earned him Fellow of SPIE and ASNT, NASA Honor Award Medals for exceptional engineering (2001) and technology (2006) achievements, SPIE's Lifetime Achievement Awards for NDE (2001) and Smart Materials and Structures (2005), 2006 ASNT Sustained Excellence award, the 2007 SPIE President's Award and many other honors and awards.

For more information, please contact Prof. EH Yang at Eui-Hyeok.Yang@stevens.edu or 201-216-5574