

**Shorya Awtar, Associate Professor of Mechanical Engineering**  
Precision Systems Design Laboratory (awtar@umich.edu, 734-615-0285)  
University of Michigan, Ann Arbor MI 48109-2125

**Research and Technology Interests**

Machine and mechanism design, mechatronic systems, precision engineering, MEMS, medical devices, nanopositioning systems, precision manufacturing and metrology, electromagnetic and electrostatic actuators

**Education**

2000-2003 Sc.D., Mechanical Engineering, Massachusetts Institute of Technology (MIT), Cambridge MA  
1998 -2000 M.S., Mechanical Engineering, Rensselaer Polytechnic Institute (RPI), Troy NY  
1994-1998 B.Tech., Mechanical Engineering, Indian Institute of Technology (IIT), Kanpur INDIA

**Appointments**

2013-present Associate Professor of Mechanical Engineering, University of Michigan, Ann Arbor MI  
2007-2013 Assistant Professor of Mechanical Engineering, University of Michigan, Ann Arbor MI  
2004-2006 Mechanical Engineer, Performance Technologies, GE Global Research, Niskayuna NY  
2003 Guest Scientist, Manufacturing Engineering Laboratory, NIST, Gaithersburg MD

**Publications** (*5 Representative*)

- Awtar, S., Slocum, A.H., and Sevincer E., 2007, "Characteristics of Beam-based Flexure Modules", *ASME Journal of Mechanical Design*, 129 (6)
- Awtar, S., Trutna, T.T., Nielsen, J.M., Abani, R., and Geiger, J.D., 2010, "FlexDex: A Minimally Invasive Surgical Tool with Enhanced Dexterity and Intuitive Control", *ASME Journal of Medical Devices*, 4 (3)
- Hiemstra, D.B., Parmar, G., and Awtar, S., 2012, "Performance Tradeoffs Posed by Moving Magnet Actuators in Flexure-Based Nanopositioning", *ASME/IEEE Transactions on Mechatronics*, PP (99)
- Olfatnia, M., Sood, S., Gorman, J., and Awtar, S., 2013, "Large Stroke Comb-drive Actuators based on the Clamped Paired Double Parallelogram Flexure", *IEEE/ASME J. Micro ElectroMechanical Systems*, 22 (2)
- Awtar, S., and Parmar, G., 2013, "Design of a Large Range XY Nanopositioning System", *ASME Journal of Mechanisms and Robotics*, 5 (2)

Overall Publications:

- Journals: Published (**24**), Under Review (**6**)
- Refereed Conferences: Published (**37**)
- Patents: Granted (**13**), Pending (**12**), Invention Disclosures (**14**)

**Technology Transfer** (*Start-up Companies*)

- [FlexDex Surgical LLC](#), Affordable Laparoscopic Surgical Tools Enhanced-Dexterity and Intuitive Control
- [HIPERNAP LLC](#), High Performance Nanopositioning Systems for Manufacturing and Metrology

**Honors and Awards** (*Selected*)

- *R&D100 Award* for one of the 100 most innovative and significant technologies of the year: High Performance Electrostatic Comb-drive Micro-Actuators (2013), High-precision Extended-range Multi-axis Nanopositioning Systems (2008)
- *College of Engineering 1938E Award* for contributions to teaching, educational growth, and service, 2013
- *Ralph Teetor Award* for outstanding contributions to engineering education, SAE, 2012
- *Freudenstein / General Motors Young Investigator Award* in kinematics for significant original contributions to the theory of mechanisms, ASME, 2011
- *Outstanding Young Manufacturing Engineer Award*, Society of Manufacturing Engineers, 2011
- *Leonardo da Vinci Award* for eminent achievement and advances in the field of machine design, ASME, 2011
- National Science Foundation *CAREER Award*, 2009
- *Rosenblith Fellowship* for graduate studies, MIT, 2000
- *Michael A. Sadowsky Award* for best M.S. thesis in Mechanical Engineering, RPI, 2000
- *Founder's Award* for academic excellence and leadership, RPI, 1999