

## “Robotic Manipulation with Simple Hands”

Professor Matthew Mason

Professor of Robotics and Computer Science, Carnegie Mellon University

**Abstract:** For about fifty years robotics researchers have been designing and testing robot hands. The designs vary dramatically in complexity, from a simple pair of tongs to a hand with complexity approaching the human hand in some respects. The "Simple Hands" project at Carnegie Mellon seeks to demonstrate advanced manipulation capabilities with very simple hands, for example a gripper with a single motor and just a few sensors. With this system we have demonstrated grasping of objects from a random bin of parts, and changing the grasp of a part once grasped. Our approach uses physics models based on Newtonian mechanics and Coulomb friction, combined with machine learning techniques.

**Biosketch:** Matthew T. Mason earned the BS, MS, and PhD degrees in Computer Science and Artificial Intelligence at MIT, finishing his PhD in 1982. Since that time he has been on the faculty at Carnegie Mellon University, where he is presently Professor of Robotics and Computer Science. His prior work includes force control, automated assembly planning, mechanics of pushing and grasping, automated parts orienting and feeding, and mobile robotics. He is co-author of "Robot Hands and the Mechanics of Manipulation" (MIT Press 1985), co-editor of "Robot Motion: Planning and Control" (MIT Press 1982), and author of "Mechanics of Robotic Manipulation" (MIT Press 2001). He is a Fellow of the AAI, and a Fellow of the IEEE. He is a winner of the System Development Foundation Prize and the IEEE Robotics and Automation Society's Pioneer Award.



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**Time: 11:00AM - 12:00NOON**

**Location: 227 Mudd**