

## Control System Design and Simulation Laboratory

### ● Lab Objective

The main objective of the lab is the research and design of various nonlinear control systems. The lab seeks to utilize nonlinear control theories to solve design problems for most of the nonlinear control systems. The designed controller is then applied on real life mechanical systems to verify its validity and practicality. Apart from this, the lab also seeks to improve the student's independent problem solving skills.

### ● Lab Features

- Designing various control schemes based on nonlinear control theories as well as validating these schemes through computer aided simulation and laboratory tests.
- Up to date software provided.

### ● Research Topics

- Design of sliding mode control systems
- Design of backstepping control systems
- Design of variable structure observers
- Design of fuzzy control systems

### ● Projects

- Design of adaptive fault tolerant controllers for perturbed nonlinear cascaded ODE-beam systems(MOST)
- An unifying design of backstepping and sliding mode controllers for a class of perturbed underactuated systems (MOST)
- Design of Adaptive Terminal Super Twisting Controllers for Perturbed Nonlinear systems (MOST)