

# Proposed Research for PI

**Theory:** High Performance Adaptive Robust Control

- Case Studies:**
- a. Control of Electro-Hydraulic Servosystems
  - b. Control of Linear-Motor Driven Positioning Systems

**Technologies:** Integration of

**Sensor**

- \* Location
- \* Bandwidth
- \* Accuracy

**Physical Properties**

- \* Actuator
- \* Structure stiffness

**Modeling**

- \*Control-oriented
- \*Effective uncertainty characterization

**Adaptive Robust Control**

Nonlinear Analysis and Synthesis

Robust to Both Parametric Uncertainties and Uncertain Nonlinearities

High Performance

Modularized Controller with Guaranteed Transient Performance

Handle Nonlinearities Associated with System Dynamics

Handle Uncertainties Inherent in Physical Systems and Processes

Meet Increasingly Stringent Performance Requirement

Facilitate Fault Detection and Performance Degradation Monitoring

Control of Complex Mechanical Systems and Manufacturing Processes

Outcome

Benefits