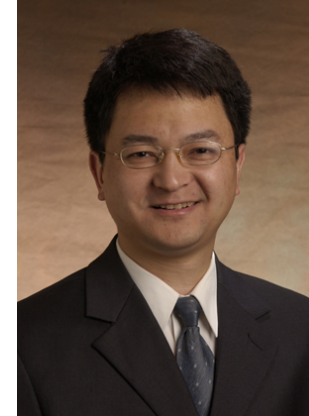


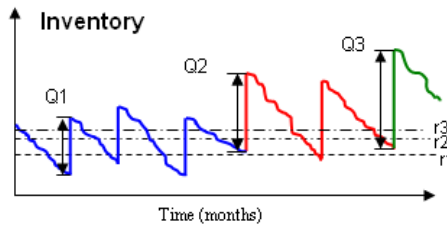


• Dr. Haitao Liao, Assistant Professor

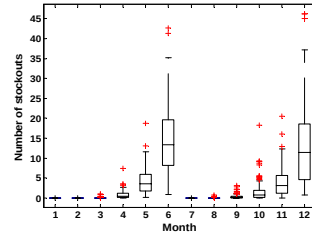
Office #: (865) 974-0984, e-mail: hliao4@utk.edu

- **Research interests:** Reliability Testing, Maintenance and Spare Part Logistics, Prognostics, Risk Assessment
- **Recent projects**
 - PI: “CAREER: Adaptive Operational Coordination Methodology for Uncertainty Reduction in Product Life Cycle Reliability and Service Logistics”, **National Science Foundation**, 2010-2015.
 - PI: “Exploration of a Statistically Accurate and Energy Efficient Accelerated Testing Methodology”, **National Science Foundation**, 2010-2013.
 - PI: “Design of Equivalent Accelerated Life Testing Plans Involving Single or Multiple Stresses”, **National Science Foundation**, 2006-2009.
- **Recent publications**
 - Mitch, R. and Liao, H. “**Joint Production and Spare Part Inventory Control Strategy Driven by Condition Based Maintenance**”, *IEEE Transactions on Reliability*, accepted, 2010.
 - Liao, H. and Elsayed, E. A., “**Equivalent Accelerated Life Testing Plans for Log-Location-Scale Distributions**”, *Naval Research Logistics*, accepted, 2010
 - Liao, H., “**Optimal Design of Accelerated Life Testing Plans for Periodical Replacement with Penalty**”, *Naval Research Logistics*, 56, 2009.
 - Liao, H. and Elsayed, E., “**Reliability Inference for Field Conditions from Accelerated Degradation Testing**”, *Naval Research Logistics*, 53, 2006.

Spare part inventory control system



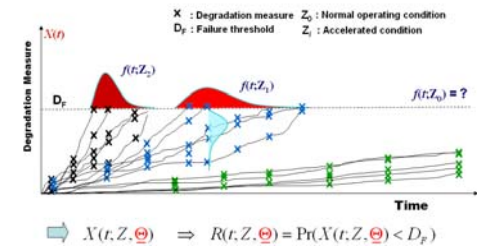
Number of stockouts



Service

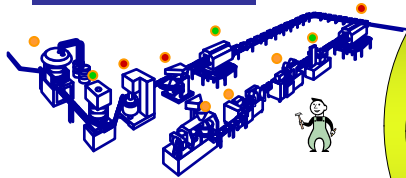
Integrated Reliability Maintenance & Service (IRMS) System

Use of short-term reliability testing to predict the long-term reliability of equipment



Manufacturing system

- Good condition
- OK condition
- Bad condition



Maintenance

Decision support

Preventive maintenance

Condition based maintenance

Service Logistics

Spare parts management

Reliability Testing

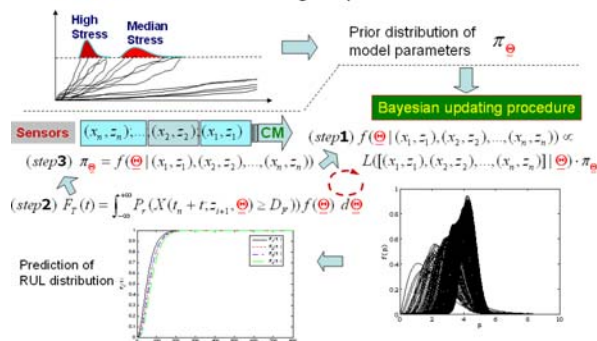
Accelerated life testing

degradation testing

HALT

Equipment remaining useful life prediction

ADT enhanced remaining life prediction tool



R&D

Environmental testing



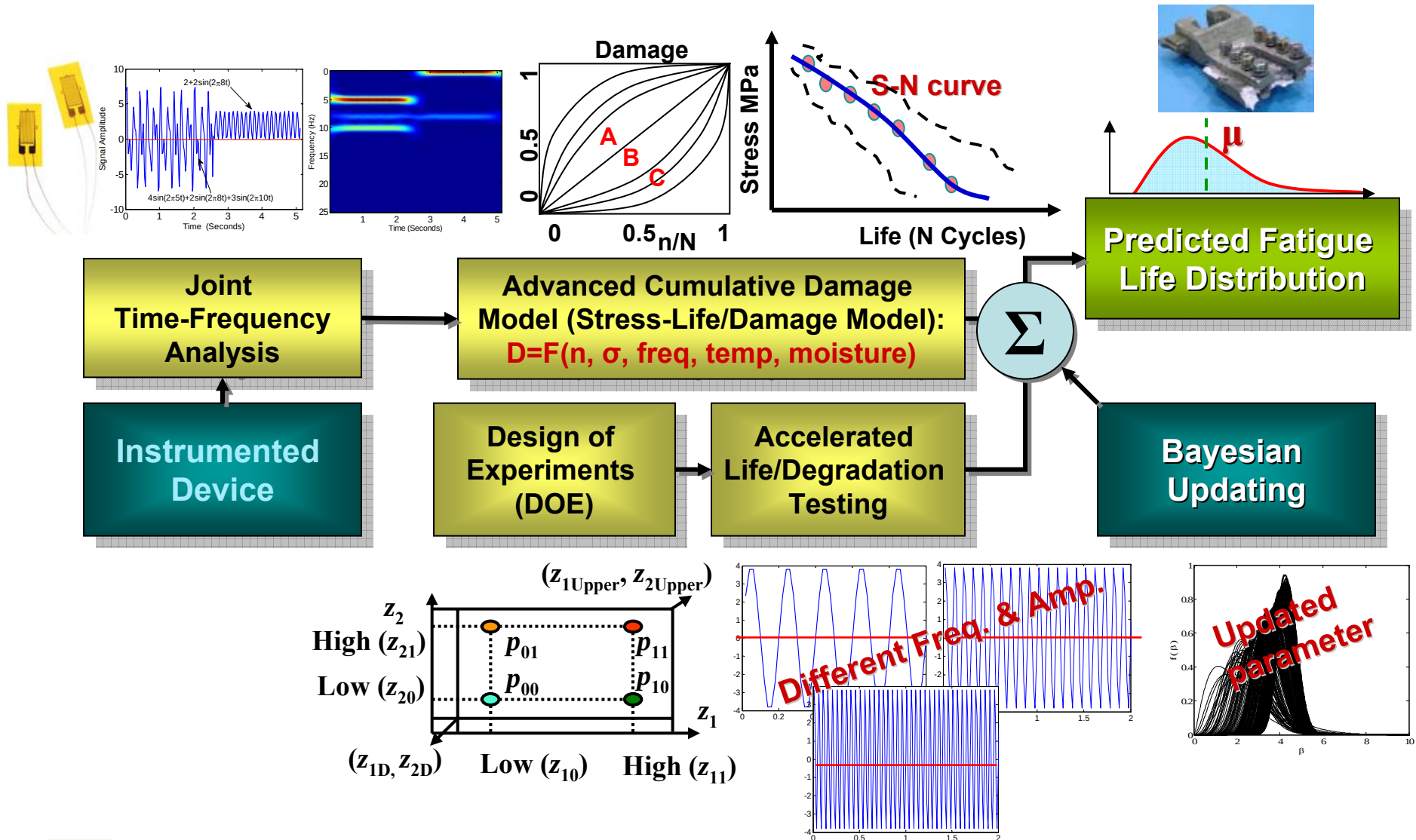
Printed circuit board



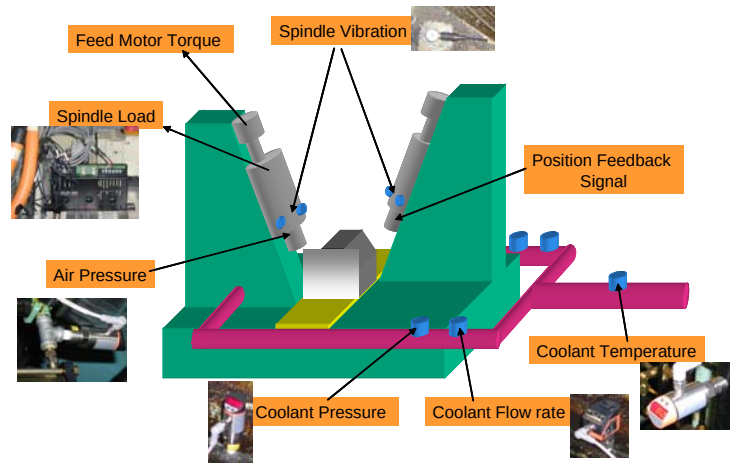
Microelectronics



Advanced Life Prediction Tool



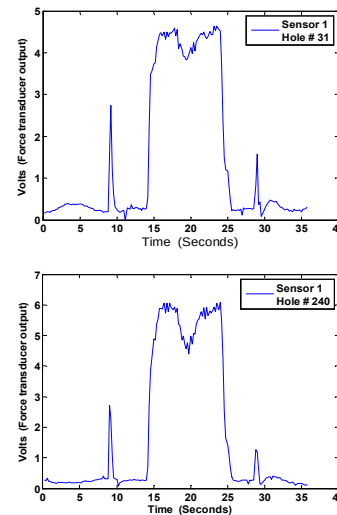
Maintenance & Spare Part Logistics through Condition Monitoring



Machine

Plant

Spindle load



Spare part & maintenance decision

