



# Faculty Member

## Timken Foundation Center for Precision Manufacturing

### Contact Information



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### Research Interests

- Systems Engineering (complex system modeling, discrete-event simulation, system design, system control, “lean”, six sigma)
- Automation and Control (language theory, deadlock avoidance policy, supervisory control; flexible manufacturing system control)
- Supply Chain Management (capture - recapture model, game theory)
- Healthcare Delivery Systems Modeling and Optimization (continuous improvement, lean and six sigma application)
- Data Mining and Machine Learning (knowledge discovery, pattern recognition, signal processing)

### Sample Research I: Comprehensive Aircraft Fleet Study

- Systematically measured the current state of FAA's Flight Program Operations
- Developed discrete event simulation models to replicate the current state of Flight Program Operations and after model validations, utilized these models to answer “what-if” questions for system-wide optimizations
- Used Analytical Hierarchy Process to compare key variables and alternative operational settings, for the comprehensive fleet study recommendation.



### Sample Research II: Facility Design Using “Lean” and Systems Thinking

- First Hospital in the nation that was completely designed using “Lean” and Systems Thinking Principles
- New design achieved:
  - flexibility in space & hospital capacity
  - a reduction of ~4,000 in annual miles traveled by staffs
  - a space saving of ~0.3M ft<sup>2</sup> through redesign
  - realization of workspaces that enhance quality & safety

