**Unified Modeling Language for Embedded Systems?**

**Research Question:**
How can we use the Unified Modeling Language (UML) to accurately model real-time embedded systems?

**Uncover Assumptions:** Time, State, and Messages
- Examine latency effects
  - on statechart transitions
  - on order of arrival of messages

*Order may or may not matter*
*Can’t assume order sent = order received*

Statecharts typically assume instantaneous transitions

**Develop Methodology:** Techniques and Training
- Continuous improvement of methodology
  - Graduate class to explore new ideas
  - Undergraduate class real-time distributed elevator project, using software simulator

*Process includes requirements, design, implementation, testing, and some graceful degradation*

**Formal Contributions:** Specification and Traceability
- More accurate specification, better traceability between diagrams
  - Formal grammar helps identify potential design mistakes
  - Enhanced traceability between sequence diagrams and statecharts

**Sponsored by:**
Carnegie Mellon University
Electrical & Computer Engineering
GM
Institute for Complex Engineered Systems

*Paper presented at UML 2001 conference*