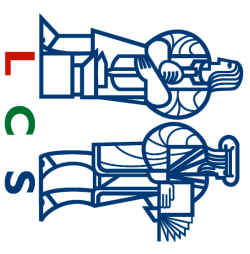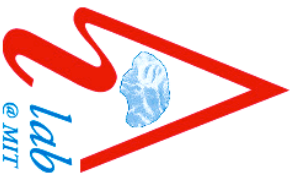**Michael Ernst**

Project Overview

Goal: increase software reliability

Approach: specifications for formal, informal reasoning
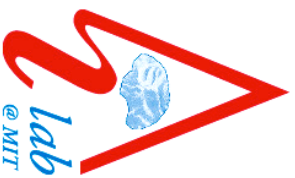
Problem: specifications are typically absent

- **programmers are reluctant to write them**
- **programmers are not very good at writing them**
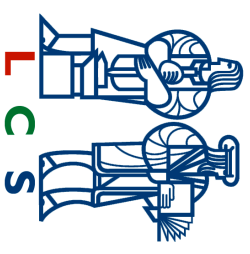- **too few tools accept them as input**

Solution: automatically infer program specifications

Application: Erdös internet agent system from NTT

Michael Ernst

Progress Through June 2002

Daikon system (tool for generating specifications)

- **7 new releases at http://pag.lcs.mit.edu/daikon/**
- **integrate research results; support users**
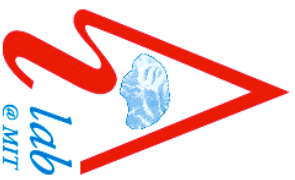
Theorem-proving

- **Java language and ESC/Java static checker**
- **IOA language (distributed algorithms)**
  - **largely automatic proofs; reduce human burden**
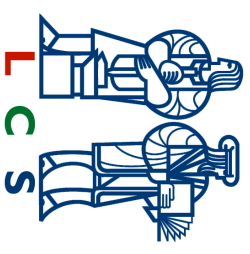 - **joint with Theory of Distributed Systems group**

Temporal invariants

- **Preliminary results, applied to commercial programs**

Michael Ernst

Research Plan for the Next Six Months

Support tools and users; make research results broadly available

Perform experiments directly on NTT's Erdös agent system from NTT, or collaborate with NTT researchers

Integrate with (automatable) Isabelle theorem-prover

Extend detection of temporal invariants