Application: Erdős Internet agent system from NTT
Solution: Automatically infer program specifications

• Too few tools accept them as input
• Programmers are not very good at writing them
• Programmers are reluctant to write them

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

Goal: Increase software reliability

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Project Overview


Michael Ernst

MIT2001-01: Dynamic Invariant Detection for Program Understanding and Reliability

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Michael Ernst

Progress Through June 2002

Temportal Invariants

- Preliminary results, applied to commercial programs
- Temporal Invariants
  - Joint with Theory of Distributed Systems group
  - Large, automatic proofs; reduce human burden
  - LIOA Language (distributed algorithms)
  - Java Language and ESC/Java static checker

Theorem-Proving

- Integrate research results; support users
- 7 new releases at http://pag.lcs.mit.edu/daiikon/

Daikon System (tool for generating specifications)

LCs
Research Plan for the Next Six Months

Michael Ernst

MIT2001-01: Dynamic Invariant Detection for Program Understanding and Reliability