The Axis of ACSys
Analysis of Computer Systems Group

Mission

Ensuring provably correct, reliable, and trustworthy software and hardware designs.

Abstract Interpretation

Model Checking

Theorem Proving

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Amir's Roles in ACSys

Translation
Validation
Synthesis
Deductive
Reasoning
Embedded
Systems
Parameter-
ized Systems
Transactional
Memories
Invisible
Invariants
Abstraction
Liveness
Shape
Analysis
Hybrid
Systems
TLV
INFRAS-
STRUCTURE,
SEO, S &
ECONOMY
How Amir Liked Things to Work
What we Really worked on

- Translation Validation
- Parameterized Systems
- Invisible Invariants
- Counter Abstraction
- Network Invariants
- Invisible Ranking
And also...

- Automatic Ranking
- Shape(less) Analysis
- Deductive Verification (for automation)
- Run-time Verification
- Synthesis
- TLV
- Testers (PSL)
- Transactional Memories
Things Didn’t Always Come Easy
Things Didn’t Always Come Easy

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<thead>
<tr>
<th>Task</th>
<th>Equipment</th>
<th>Time</th>
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<tbody>
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<td>2 Professors of Computer Science</td>
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ACSys in Action: TV

- Amir: Initial Basic Vision
- Ben: Compiler Knowledge
- Yi: Initial Implementation
- Ying: Loop Optimizations
- Clark: Theorem Proving
- Ittai: WWW-ing
- (Lenore: Cracking the Whip)
Overview of an Ideal TVOC

C, Fortran

Front End

IR

Translation Validation Tools

"Yes" or "No"

INTEL
Open Research Compiler (ORC)

Loop Optimizations

Global Optimizations

Machine Dependent Optimizations

Code Generation

IA-64 Assembly
A Fair Transition System

Justice={silence, humour, great idea}
Amir’s Roles