

VERIFYING INTEROPERABILITY REQUIREMENTS IN PERVASIVE SYSTEMS

Start-up meeting: 13th November 2008

10:30 in Room 404, Sir Alwyn Williams Building, U. Glasgow.

Attending:

Mark Ryan, Eike Ritter, Myrto Arapinis (Birmingham)

Muffy Calder, Phil Gray, Alice Miller, Chris Unsworth
(Glasgow)

Michael Fisher, Savas Konur, Sven Schewe (Liverpool)

Apologies: Louise Dennis (Liverpool)

Agenda

1. **Welcome, Introductions, Capabilities/Expertise**

10 minute introduction by each of the PIs about the relevant expertise/capabilities/interests at their site: Liverpool (Michael Fisher); Birmingham (Mark Ryan); Glasgow (Muffy Calder).

2. **Other Case Studies**

- "What is interoperability?" (discussion led by Savas Konur)
- Brainstorming other relevant case studies (ALL)

LUNCH

3. **MATCH Case Study**

- MATCH case study (Chris Unsworth)
- MATCH overview (Phil Gray)
- Brainstorming requirements of MATCH case study (ALL)

4. **Plans (ALL)**

- what do we need to do in the short term?
- what should we tackle in the medium term?
- planned collaborations (who should work with who, and on what)?
- targets/milestones?
- reporting, Wiki, etc.

5. **AOB**

6. **Next meeting**

Who are we?

- Michael Fisher [PI]
<http://www.csc.liv.ac.uk/~michael>
- Louise Dennis [Researcher co-investigator]
(and post-doctoral RA on another project)
<http://www.csc.liv.ac.uk/~lad>
- Savas Konur [Post-doctoral RA]
<http://www.csc.liv.ac.uk/~konur>
- Sven Schewe [Lecturer]
<http://www.csc.liv.ac.uk/~sven>

All of the above work within **Logic & Computation** research group in Department of Computer Science at the University of Liverpool.

Liverpool Capabilities/Expertise

- Specification
 - ⇒ temporal/modal logics, games
- Verification
 - ⇒ model-checking, deduction (classical, modal, temporal), proof planning
- Implementation
 - ⇒ automata and automated synthesis, direct execution, agent programming languages
- Application areas
 - ⇒ multi-agent systems, pervasive computing, autonomous systems (in space exploration), security

Individual Interests: Michael Fisher

Research Background:

- temporal logics and deduction

Tractable Temporal Reasoning — Dixon, Fisher, & Konev. In *Proc. IJCAI, 2007*.

- programming languages for autonomous systems

Specifying and Reasoning about Uncertain Agents — de Carvahlo Ferreira, Fisher, & van der Hoek. *Int. Journal of Approximate Reasoning, 2008*.

- model checking for agents

Verifying Multi-Agent Programs by Model Checking — Bordini, Fisher, Visser, & Wooldridge. *Journal of Autonomous Agents and Multi-Agent Systems, 2006*.

Research Interests: autonomous systems, space exploration, swarm robotics, pervasive systems, security, organisations and teamwork

Individual Interests: Savas Konur

Research Background:

- temporal logics and real-time systems

An Interval Temporal Logic for Real-Time System Specification — Konur. *PhD Thesis, U. Manchester*, 2008.

- natural language semantics

An Interval Logic for Natural Language Semantics — Konur. In *Proc. AiML 2008*.

- multi-agent systems and machine learning

Learning Decision Trees for Action Selection in Soccer Agents — Konur, Ferrein & Lakemeyer. In *Proc. W/shop of Agents in Dynamic and Real-time Environments, ECAI 2004*.

Research Interests: multi-agent systems, real-time, natural language

Individual Interests: Sven Schewe

Research Background:

- decidability and complexity of agent logics

ATL* Satisfiability is 2EXPTIME-complete — Schewe. In *Proc. ICALP 2008*.

- synthesis

Uniform distributed synthesis — Schewe & Finkbeiner. In *Proc. LICS 2005*.

Bounded Synthesis — Schewe & Finkbeiner. In *Proc. ATVA 2007*.

- solving parity games

Solving Parity Games in Big Steps — Schewe. In *Proc. FSTTCS 2007*

An Optimal Strategy Improvement Algorithm for Solving Parity Games — Schewe. In *Proc. CSL 2008*.

Research Interests: automata and game theory, construction and analysis of safety-critical systems, real-time and model checking.

Individual Interests: Louise Dennis

Research Background:

- **model-checking for agents**

Automated Verification of Multi-Agent Programs — Bordini, Dennis, Farwer, & Fisher. In *Proc. ASE, 2008*

- **proof planning and verification**

An Architecture for Proof Planning Systems — Dennis. In *Proc. IJCAI 2005*.

Program Slicing and Middle-Out Reasoning for Error Location and Repair —Dennis. In *IJCAR 2006 workshop on Disproving: Non-Theorems, Non-Validity and Non-Provability, 2006*.

Research Interests: **BDI agent languages, proof planning, verification**