Research activities

at

Institute e-Austria Timisoara

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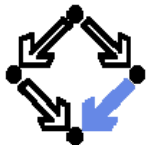# Institute e-Austria Timisoara

- Research institute in Computer Science
- Human resources:

  - Computer Science Department, UVT,
    Western University of Timisoara, Romania

  - Department of Computers, UPT,
    Politechnical University of Timisoara, Romania

  - Research Institute for Symbolic Computation, RISC,
    Johannes-Kepler University of Linz, Austria

External partners – e.g. University of Iasi, Romania;
Romanian Academy – Iasi branch

IeAT aims

- Encourage research carriers
- Bridge between research and software industry
- Kernel of the IT Park
- Reinforce the international cooperation

http://www.ieat.ro

IeAT - Funds

- Austrian Ministries (Oct. 2002- June 2006):
    - Research & Education (research: software verification)
    - Labour (open an IT Park in Timisoara)

- Contracts for technology transfer, e.g.:
    - Alcatel – Romanian branch (2003-2004)
    - Commeon & RISC GmbH, Austria (2003-2005)

- Own research projects (EU, national)

Research projects in 2006

Field	*Funds*
Software verification	Austrian
Math.knowledge manag.	EU
Software quality	Swiss
Simulations on grids	EU,Romanian
Natural computing	Romanian

Software verification

Main directions:

- Formal verification   UPT
- Software quality measurement   UPT
- Program analysis   RISC
- Automated proving   RISC
- Parallel and Grid techniques   UVT
- Technology transfer   UPT

Knowledge management

FP6 ERG Project Proposal No. 012718,

2005-2006

"Systematic Mathematical Theory Exploration within the Theorema System: Case Studies"

Subject: Mathematical knowledge management

FP6-ERG5-12718: SysteMathEx - Systematic Mathematical Theory Exploration in the Theorema System: Case Studies

- Objective: providing major case studies of systematic mathematical theory exploration using the threads model in the frame of the Theorema system and the refinement of Theorema in order to support these case studies

SCIEnce EU project ('06-'11)

- goal: improve integration between key world-leading developers and application experts in Symbolic Computation software systems.

- Develop versions of the GAP, Maple, KANT and MuPAD systems which can inter-communicate via a common standard Web services interface

- Develop common standards and middleware to allow the production of Grid-enabled systems for Symbolic Computation

SCIEnce partners

1. University of St Andrews, School of Computer Science, St Andrews, UK
2. Universitaet Linz, Research Institute for Symbolic Computation, Linz, Austria
3. Centre National de la Recherche Scientifique, Laboratoire d'Informatique UMR, Palaiseau, France
4. Universitaet Paderborn, Institute for Mathematics - AutoMATH, Paderborn, Germany
5. Technische Universiteit Eindhoven, Department of Mathematics and Computer Science, Eindhoven, Netherlands
6. Technische Universitat Berlin, Institut für Mathematik - KANT Group, Berlin, Germany
7. Institute e-Austria Timisoara, Timisoara, Romania
8. Waterloo Maple Inc., Dep. of Research and Development, Waterloo, Ontario, Canada
9. Heriot Watt University, School of Mathematical and Computer Sciences, Edinburgh, UK

CaVIS

Romanian-Austrian Workshop on

Computer Aided Verification of Information systems

http://www.ieat.ro/IeAT/workshop/

February 2003, October 2003, February 2004, September 2004

Particularity: research papers & demo for IT companies

Other projects

- NOREX – with Switzerland on software quality
- SEPROPI (RO)– stability, membrane computing, mathematical knowledge exploration
- SIAPOM (RO) – optimization and parallel computing for aerospace industry

Security issues

- Organize NATO Workshop VISSAS 2005

„Verification of Infinite-State Systems with Applications to Security", 17-22 March 2005

- French Programme ECO-NET:

„Executables and verifiable models for the security of the communicant systems"

2004-2005

Simulations

RO-CEEX Grant 2005-2007

„Modeling the crystalisation, structuring and transport in nano-structured systems", http://nanosim.ieat.ro

Partners:

Physics Faculty, UVT   models

RO Academy(Tim.branch)   methods

IeAT   software

Natural computing

Main directions:

- Membrane computing (P-systems)
- Neural networks
- Evolutionary algorithms

Web-PS (2004 ->)

- A web based P systems simulator
  - The simulator is implemented in CLIPS. CLIPS is embedded in a C program that uses Expat for XML parsing. In the web application version this C program implements the CGI using LibCGI

http://psystems.ieat.ro

Questions

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