

AI-related Research conducted by GEIST

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<http://geist.agh.edu.pl>



- 1 About us
- 2 Main research areas
 - Business Intelligence
 - Ambient Intelligence
- 3 Thank you



Group for Engineering of Intelligent Systems and Technologies

<http://geist.agh.edu.pl>

Group for Engineering of Intelligent Systems and Technologies

- Coordinated by: dr hab. inż. Grzegorz J. Nalepa.
- Scientific supervision: Prof. dr hab. inż. Antoni Ligęza



GEIST is a part of:

- Department of Applied Computer Science
- AGH University of Science and Technology

Main research areas

- Design, Implementation and Verification of Rule-Based Systems and Business Rules
- Semantic Knowledge Engineering, Semantic Wikis
- Engineering of Intelligent Systems
- Business Intelligence
- Ambient Intelligence



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- Dr hab. Marcin Szpyrka
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Team - 600

GEIST - Group for Engineering of Intelligent Systems and Technologies

Welcome to the GEIST Research Group Website

GEIST is led by Professor [Adam Łajtha](#), and coordinated by Docent [Grzegorz J. Nalepa](#).

It is a part of the [Computer Science Lab](#) at the [Department of Automatics](#) at [AGH University of Science and Technology](#).

It is active in the areas of intelligent systems, knowledge and software engineering, Semantic Web and Internet technologies as well as databases. (see the group's [research profile](#))

The group has been involved in number of international research projects. For more information see [recent activity](#), [projects](#), [publications](#) and [software](#).

GEIST members and contact information can be found [here](#).



GEIST news

- 23 October 2012 - [Dr. Inés del Corral](#), [Spain](#) receives a scientific award
Nagrody Naukowe Polityki - w kategorii Nauki Techniczne.
CONGRATULATIONS!! [READ MORE...](#)



Coming events

Coming events we are involved in:

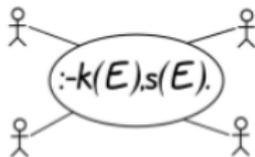
- 2012-11-18 - Most GEIST ([Grzegorz J. Nalepa](#)) at [The 7th International Conference on Software Engineering Advances](#), Lisbon, Portugal. See [http://www.iaia.org/track/index.php/ICSEA12/2012](#).

Conference news

- ICSEA 2012: The 7th International

<http://geist.agh.edu.pl>

Recent activities



New graduate studies

Starting spring 2013



- knowledge representation and reasoning
- machine learning and robotics
- Business Intelligence systems
- Semantic Web technologies
- Ambient Intelligence and mobile applications
- AI in games, NLP and Recommender Systems
- R&D seminars with invited guests
- creativity workshop based on Stanford experience

1 About us

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Knowledge representation

- Formal languages for knowledge representation — ALSV(FD) logic.
- Visual rule languages — XTT2 rule language.
- Custom inference algorithms.

Knowledge integration

- Semantic rule interoperability.
- Integration of Business Rules and Business Processes.

Deliverables

A complete design framework providing set of tools:

- Visual Business Rules editor — HQEd.
- Dedicated inference engine — HeaRT.
- Quality analysis module — HaIVA.

Modeling

Integration of the HeKatE tools with a selected BPMN tools

Runtime

Application of the HeaRT rule engine for executing selected BPMN models



Analysis

2 levels are considered

- local verification (for BPMN elements as well as rule tables in BPMN tasks)
- global verification (for BPMN models)

Title: Semantic Knowledge Engineering for Business Intelligence – concepts and tools

- summary of the last few years of research
- presentation of methods and tools developed within our projects

List of topics

- 1 SKE: Introduction, Concepts, and Design Process
- 2 Rule Formalization with ALSV(FD) and XTT2
- 3 Practical Implementation of the SKE Approach
 - Visual Rule Modeling with HQEd
 - Rule Execution in HearT
- 4 Rule Design for the Semantic Web and Knowledge Modeling with Loki
- 5 Methods for Visual Modeling of Rules. Integrating Rules with Processes towards Semantic Business Intelligence

Research & development project

- Prosecco – Processes, Semantics and Rules for Management of SME
- Consortium with Softhis sp. z o.o. and Politechnika Poznańska

*PROcesses,
SEMantics
Colaboration
for COmpanies...*



Research projects

- SaMURal – Methods for Rules Interoperability
- HiBuProBuRul – Hierarchical Business Process and Business Rules Modelling

Didactics within *Engineering of Intelligent Systems* studies

- Business Intelligence Modelling
- Rule-based Decision Support
- R&D Seminars

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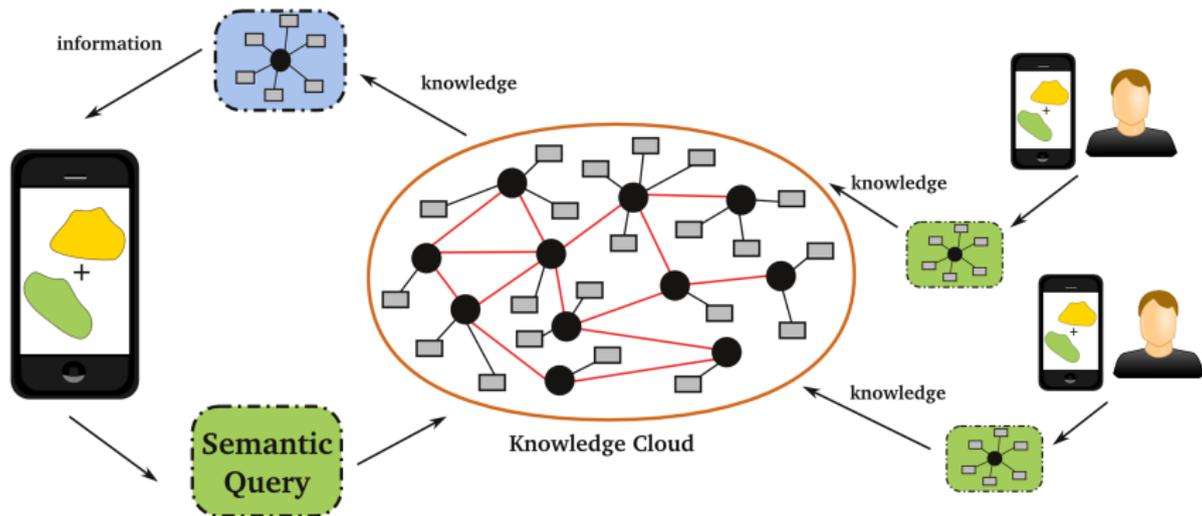
Intelligent user interfaces



Ambient Intelligence

- simple input - complex processing - simple output
- semantic queries with parameters defined by context
- rules capturing user preferences
- semantic hinting assisting the user
- Intelligent Adaptive UI: presentation of information depending on context

Semantic knowledge engineering



Ambient Intelligence Laboratory

- 16 notebook workstations
- 4 tablets
- 2 smartphones
- 1 Smartboard
- 2 augmented reality glasses

Projects – applications

- Context- and Content-Adaptative Communication Networks
- Adaptive Context-Aware Augmented Reality Interfaces

Didactics within *Engineering of Intelligent Systems* studies

- Ambient intelligence
- Machine learning
- Semantic Web Technologies
- Human computer interaction

Thank you for your attention

Thank you for your attention!

Do you have any questions?

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