INTELLIGENT SYSTEMS GROUP

Contact details

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<tr>
<th>Name</th>
<th>Intelligent Systems Group</th>
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<tr>
<td>Acronym</td>
<td>ISG</td>
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<td>Logo</td>
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| Site | http://cs-gw.utcluj.ro/~isgroup  
| Address | 26-28 G. Baritiu Str., 400027, Cluj-Napoca, Romania |
| Faculty Department | Faculty of Automation and Computer Science  
Computer Science Department |
| Telephone | +40 264 401446 |
| Fax | +40 264 594491 |
| Director | Prof. Dr. Eng. Ioan Alfred Letia |
| e-mail | letia@cs.utcluj.ro |

Areas of expertise

- Knowledge representation and reasoning  
  - Semantic Web; Ontology engineering; Text-based ontology learning; Ontology matching; Semantic annotation  
  - Multi-agent systems  
  - Agreement technologies; Argumentation theory; Trust modeling; Argumentative agents for norm compliance  
- Business processes re-engineering.  
  - Semantic web services composition; Decision support systems; Expert systems; Norm Compliance  
- Norm compliance  
  - E-contracts; Model checking; Arguing conformance

Team


Representative projects

- ARGSAFE, “Using Argumentation for Justifying Safeness in Complex Technical Systems”, PNII-Capacitatii,  
- ASDEC, “Structural Argumentation for Decision Support with Normative Constraints”, PNII-Capacitatii,  
- LELA, “Collaborative Recommendation System in the Tourism Domain Using Semantic Web Technologies and Text Analysis in Romanian Language”, PNII-INOVAIRE,  
- GREEN-VANETS, “Improving Transportation Using Car-2-X Communication and Multi-Agent Systems”, Intern project -Technical University of Cluj-Napoca,  
  http://cs-gw.utcluj.ro/~adrian/projects/vanets  
- ARGNET, “Structured Argumentation in a Web Context”, PNII-IDEI 170,  
  “Automating Online Dispute Resolution for B2B using multi-agent systems”, CNCSIS-534  
Significant results

The most representative publications of the past 5 years:

6. A. Marginian, “Question answering over biomedical linked data with grammatical framework”, in Semantic Web: Interoperability, Usability, Applicability, 2016, in press

Significant solutions:
Checking compliance in business processes a version of description logic, enhanced with normative modalities, has been used with application to the Hazard Analysis at Critical Control Points standard. Contributions to fundamental research in argumentation and demonstrate innovative technologies validated in real-world scenarios such as safety standards, justifying audit decisions, and structured arguments for medical decision support.

Products and technologies:
1. Named Entity Recognition and ontology population through natural language processing of Romanian language
2. Compliance checking of business processes based on semantic technologies
3. Arguing conformance against ISO-like standards
4. E-Contracts monitoring

The offer addressed to the economic environment

| Research & development | Norm compliance: verifying business processes against norm compliance and quality standards like HACCP or ISO 22000.
| Support for dispute resolution for Small and Medium Enterprises in case of contract breach.
| Semantic-based business process re-engineering.
| Decision support systems based on domain-based, safety arguments.
| Logistic planning.
| Using argumentation for justifying safeness of complex technical systems.
| Agent oriented technology in support of e-business.
| Model checking of business processes against ISO-like quality standards.
| Representing and reason on business rules for e-commerce applications.
| Modelling and simulating trust on the Web.
| Semantic search of business products.
| Opinion mining for e-business.
| Natural language processing |
| Consulting | Consulting, design, research and prototyping towards development of semantic-based intelligent systems.
| Applied engineering services: engineering safety critical systems, business process re-engineering, model checking verification of computer systems, ontology engineering. |
| Training | **Semantic Technologies**: ontology engineering, reasoning on ontologies, linked data, OWL, RDF
| **Model checking**: Computation Tree Logic, Kropke models, hybrid logics.
| **Agent-based programming**: Semantic Web services, multi-agent technologies |