

Kolloquium Angewandte Informatik

Gravitation and Fitness in Ontology Dynamics

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The talk presents the theoretical framework for measuring how well an ontology fits the set of (changing) requirements in a Domain of Discourse. The idea is to borrow a plausible analogy of a “system law” from the field of Dynamics in Mechanics – the Newton’s Law of Universal Gravitation. This analogy is exploited for building the law of gravitation in dynamic systems comprising a Domain of Discourse and ontologies describing this domain. As ontology elements do not possess physical mass, this component of the gravitation law is substituted by the property of *fitness* of an ontology to the requirements of the knowledge stakeholders regarding the described domain. It is also argued in the talk that the implementation of the developed theoretical framework is feasible as the supporting techniques, including some software tools, already exist. As the examples of the relevant component methods and tools, the talk presents concisely the OntoElect methodology, Ontology Difference Visualizer, and Structural Difference Discovery Engine. These instruments help solve some practical problems in eliciting domain requirements, developing structural contexts for the requirements, generating the mappings between these structural contexts and the target ontology, computing increments and decrements of ontology fitness based on these mappings. The talk concludes that the presented framework has prospects to be applied practically for visualization and analysis of ontology changes in dynamics. Use cases for ontology refinement and anomaly detection are suggested for validation.

Speaker:

Vadim Ermolayev visits KIT in frame of the Marie Curie IRSES project SemData. He is an associate professor at the Department of Information Technologies (IT) of Zaporizhzhya National University and the lead of the Intelligent Systems Research Group. Apart of his academic work, he also a consultant for industries and public sector in Knowledge Engineering and Management, Semantic Technologies, Intelligent Software Systems, Distributed Artificial Intelligence. A particular research topic that Vadim focuses on throughout his research career is capturing the dynamics and adaptability of real world in intelligent software artifacts. The projects he took part in were focused on: intelligent systems and knowledge representation for enterprises; business and informal process dynamics; intelligent distributed information retrieval; the confluence of agent-based systems and Semantic Web services; ontology engineering and management with a focus on evolution and refinement; performance management in engineering design.

Termin: Dienstag, 26. Januar 2016, 14.00 Uhr
Ort: Englerstraße 11, 76131 Karlsruhe
Kollegiengebäude am Ehrenhof (Geb. 11.40), 2. OG, Raum 253
(Hinweise für Besucher: www.aifb.kit.edu/web/Kontakt)

Veranstalter: Institut AIFB, Forschungsgruppe Wissensmanagement

Zu diesem Vortrag lädt das Institut für Angewandte Informatik und Formale Beschreibungsverfahren alle Interessierten herzlich ein.

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