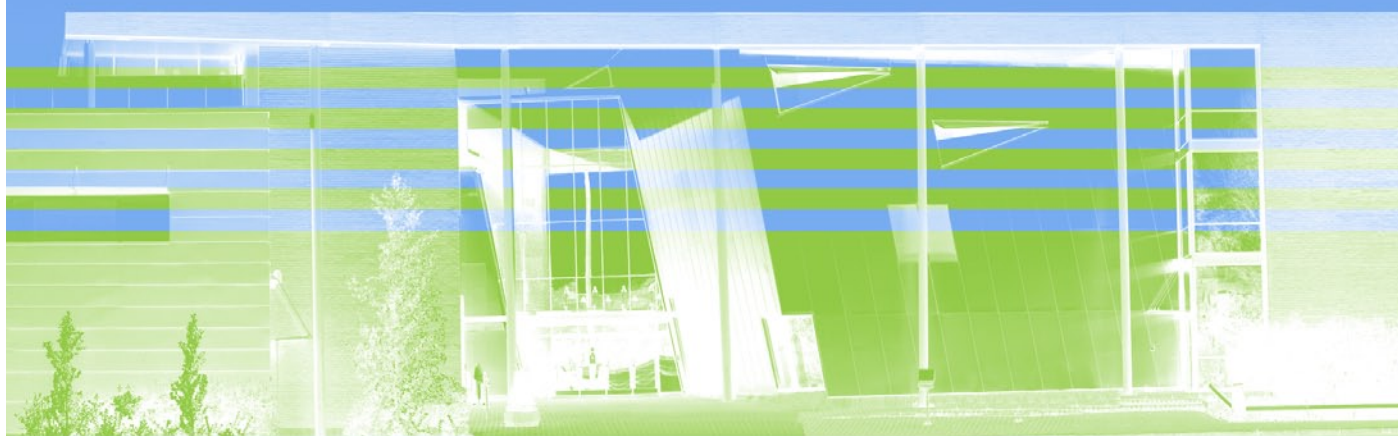# AKRR

**FIRST CALL FOR PAPERS**

## 05

**INTERNATIONAL AND INTERDISCIPLINARY CONFERENCE ON ADAPTIVE KNOWLEDGE REPRESENTATION AND REASONING**

HELSINKI UNIVERSITY OF TECHNOLOGY, ESPOO >>>> FINLAND
15-17 JUNE 2005 >>>>>>>>> http://www.cis.hut.fi/AKRR05

# AKRR 05

**INTERNATIONAL AND INTERDISCIPLINARY CONFERENCE ON ADAPTIVE KNOWLEDGE REPRESENTATION AND REASONING**

## BACKGROUND

Knowledge representation and reasoning are traditional areas within artificial intelligence. In the modern society they are underlying building blocks in various kinds of information systems and networks. Knowledge representation and reasoning are also central themes in cognitive science and epistemology. Relevant questions include how we know what we know, how we can make useful inferences, and how we can use computers in models and applications of knowledge representation and reasoning. Traditional models have been based on predicate logic, semantic networks and other symbolic representations.

## CONFERENCE TOPICS

This conference focuses on adaptive approaches of knowledge representation and reasoning. The basic idea is to bring together evidence from various disciplines including computer science, experimental psychology, brain research and cognitive science. Methodical basis lies in probability theory, statistics, artificial neural networks, dynamical systems theory and related disciplines.

## SPECIFIC SYMPOSIUM AND WORKSHOP TOPICS IN THE CONFERENCE ARE:

> Knowledge Representation of Biological Information
> Adaptive Models of Knowledge, Language and Cognition
> Emergent Models of Language for Speech Processing and Machine Translation
> Adaptive Representations in Agents and Embodied Systems

## WE INVITE NOVEL HIGH-QUALITY PAPERS THAT ARE RELATED TO THE CONFERENCE THEMES INCLUDING BUT NOT LIMITED TO:

> contextuality in statistical analysis and reasoning
> Bayesian models of learning and reasoning
> dynamical systems models of knowledge
> spatial representations of knowledge
> analyses of the limitations of logic-based representations and reasoning
> highly contextual reasoning based on very high-dimensional representations
> continuous formal systems
> pattern-based reasoning
> unsupervised and reinforcement learning models for knowledge acquisition and representation
> emergent representations based on independent component analysis and self-organizing maps
> emergence of symbolic representations

> cognitive models of perceptually grounded reasoning processes
> knowledge representation and reasoning in non-stationary environments
> explicit and implicit knowledge
> internal and external representations
> models of temporal processes and reasoning
> subjective and intersubjective representation of time
> knowledge representation and reasoning in the brain
> non-symbolic ontologies and adaptive knowledge representation for the web
> adaptive, dynamical and probabilistic representations of social and societal structures and processes
> adaptive knowledge representation of industrial processes
> probabilistic and pattern-based reasoning on financial and economical phenomena
> emergent and evolutionary representations for creative and design processes

## IMPORTANT DATES

> Paper submission due: 29 January 2005
> Acceptance notification: 14 March 2005
> Deadline for early registration: 21 March 2005
> Camera-ready paper due: 8 April 2005
> Conference: workshops and tutorials: 14 June 2005 symposia and conference: 15-17 June 2005

## INVITED SPEAKERS

> Prof. Jonathan Evans, University of Plymouth
> Dr. Aapo Hyvärinen, University of Helsinki
> Prof. Juha Karhunen, Helsinki University of Technology
> Dr. Gabriella Vigliocco, University College London

## ORGANIZERS

> Programme committee chair: Prof. Timo Honkela, Helsinki University of Technology
> Organizing committee chair: Prof. Olli Simula, Helsinki University of Technology

## CONFERENCE VENUE

AKRR'05 conference will be held at Helsinki University of Technology, in Espoo, Finland, 15 minutes by bus from central Helsinki and 20 minutes by taxi from the Helsinki-Vantaa airport. In addition to the conference technical programme, several social activities are being planned to allow attendees time for free-form discussions and opportunities to enjoy the Finnish summer.