Workshop Schedule

10:30 – 11:00
Oliver Ray and Bruno Golenia
A Neural Network Approach for First-Order Abductive Inference
11:00 – 11:30
Amitabha Mukerjee
Using attentive focus to discover action structures from perceptual data
11:30 – 12:00
Kun Tu and Hava Siegelmann
Text-based Reasoning with Symbolic Memory Model

Lunch break

13:45 – 15:00
Keynote Talk by Ben Goertzel
Cognitive Synergy: A Principle to Guide the Tight Integration of
Heterogeneous Components in Integrative AI Systems

Coffee break

15:30 – 16:00
Sebastian Bader
Extracting Propositional Rules from Feed-forward Neural Networks by
Means of Binary Decision Diagrams
16:00 – 16:30
Amitabha Mukerjee and Madan Dabeeru
Symbol emergence in design
16:30 – 16:45
Leo de Penning, Bart Kappe and Karel van den Bosch
A Neural-Symbolic System for Automated Assessment in Training
Simulators: A Position Paper
16:45 – 17:45
Discussion session, chaired by Luis Lamb

Workshop Organisers

Artur d'Avila Garcez, City University London, UK
Pascal Hitzler, University of Karlsruhe (TH), Germany

Programme Committee

Sebastian Bader, University of Rostock, Germany
Howard Blair, Syracuse University, NY, U.S.A.
Claudia d'Amato, University of Bari, Italy
Marco Gori, University of Siena, Italy
Barbara Hammer, TU Clausthal, Germany
Ioannis Hatzilygeroudis, University of Patras, Greece
Steffen Hölldobler, TU Dresden, Germany
Henrik Jacobsson, Google Zurich, Switzerland
Ekaterina Komendantskaya, University of St. Andrews, Scotland
Kai-Uwe Kühnberger, University of Osnabrück, Germany
Luis Lamb, Federal University of Rio Grande do Sul, Brazil
Hannes Leitgeb, University of Bristol, UK
JamesL. McClelland, Stanford University, CA, U.S.A
Anthony K. Seda, University College Cork, Ireland
Ron Sun, Rensselaer Polytechnic Institute, NY, U.S.A.
Frank van der Velde, Leiden University, The Netherlands
Gerson Zaverucha, Federal University of Rio de Janeiro, Brazil

Preface

Artificial Intelligence researchers continue to face huge challenges in their quest to develop truly intelligent systems. The recent developments in the field of neural-symbolic computation bring an opportunity to integrate well-founded symbolic artificial intelligence with robust neural computing machinery to help tackle some of these challenges.

Neural-symbolic systems combine the statistical nature of learning and the logical nature of reasoning.

The Workshop on Neural-Symbolic Learning and Reasoning provides a forum for the presentation and discussion of the key topics related to neural-symbolic integration.

Topics of interest include:

- The representation of symbolic knowledge by connectionist systems;
- Learning in neural-symbolic systems;
- Extraction of symbolic knowledge from trained neural networks;
- Reasoning in neural-symbolic systems;
- Biological inspiration for neural-symbolic integration;
- Neural networks and probabilities;
- Neural networks and relational learning;
- Applications in robotics, semantic web, engineering, bioinformatics, etc.

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