

## **Session 4.**

### **Track: Cognitive Automation**

Chairs:

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### **Special Session: Modeling the Mind**

In order to improve interaction between machines and humans we do not only have to develop better mechanisms for tasks like perception or information fusion; we have to bring together these achievements and integrate them into a comprehensive and consistent model of the human mind, which shall serve as a framework for future research. We need an integrative model, which describes many or all abilities of the human psychic apparatus in a consistent way. Researchers are invited to present candidate models or research approaches on how to achieve the goal of creating complete and consistent models of the human mind, not focusing on single mechanisms, but rather on finding approaches to create a bigger picture that allows for future development of systems that are capable to better understand the real world that humans live in.

### **Topics**

- Technical models of the human mind
- Memory and knowledge representation
- Models of cognitive mechanisms for information evaluation and decision making
- Artificial Intelligence (AI) integrating embodiment and symbol grounding
- Neurologic and psychoanalytic models of functions or mechanisms of the human mind
- Alternatives to classic programming of algorithms including genetic algorithms, mutations or hybrid approaches of different approaches

## **Workshop: Cognitive Sensor Fusion**

Future security and surveillance systems require advanced capabilities in many areas in order to provide meaningful evaluations about their observations. Automatic surveillance will only be possible if the failure rates decrease and systems get more reliable. Diverse and redundant sensor modalities have to be used to grasp information from the environment. New algorithms, for example hierarchical, bionically-inspired, evolutionary, symbolic, statistical, or hybrid approaches are required to extract semantic information from the sheer flood of data. Scenario recognition is a key issue. Assessment of allowed behavior of persons, objects, vehicles, or crowds will be used to target the attention of still existing security staff to areas of interest within the system's view.

### **Topics**

- Multi-camera tracking
- Multisensor fusion of audio, video and other sensor modalities
- Statistical methods for image processing and behavior recognition
- Advanced Video Surveillance and Machine Vision
- Cognitive Perception
- Interdisciplinary approaches to recognition and decision systems

We welcome live demonstrations and presentations of working prototypes.