

## SPECIAL SESSION

### Technical Support for Analysis of Human Error in Task Performance

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Safety, efficiency and worker well-being often depend on correct task performance. Yet, the structured or even repetitive nature of these tasks can lead to a worker's loss of attention, fatigue, stress or other mental states that negatively affect the performance of the work. Such states are more likely to cause the introduction of human errors, with associated risk.

By bringing sensor technology into the work place, human behavior can be analyzed and interpreted automatically. Cameras can observe human posture, head movement and gestures. From these, the task at hand can be analyzed. Eye trackers can determine the worker's focus of attention. Microphones can pick up subtleties in the worker's voice. From these measurements, deviations from normal task flow or worker's alertness can be identified at an early stage, and might trigger alarms or start check or safety procedures.

As the sensing and interpretation technologies are currently at the point of maturing, there is a growing interest to apply these techniques at the workplace. This requires the development of integrated solutions of automatic human error assessment and prevention that combine sensor technology and robust interpretation with knowledge of the task and the user. These solutions are starting to find their place in automation industry, call centers and assembly lines. Also, desktop-related working environments can benefit from such solutions. In addition, there is a growing demand for these techniques to be applied in training and simulation (e.g. driving simulators), and in consumer products (e.g. ATMs).

In this special session, we aim at bringing together an audience from both academia and industry. We highlight recent advances from a technical point of view, and requirements from an industry perspective. In our discussion, we focus on current challenges and collaborations and ways to address these.

#### **SPECIAL SESSION CONTENTS** (sorted by paper ID)

##### **Measuring Electrodermal Activity of Both Individuals With Severe Mental Disabilities and Their Caretakers During Episodes of Challenging Behavior**

Matthijs Noordzij (University of Twente, The Netherlands), Patrick Scholten and Marleen Laroy-Noordzij (De Twentse Zorgcentra, The Netherlands)

##### **Generic Tool for Online Classification of Physical and Mental Workload**

Christoph Hintermüller, Günther Edlinger and Christoph Guger (Guger Technologies, Austria)

##### **The Neural Origins and Applications of Human Error Processing**

Tsvetomira Tsoneva and Gary Garcia-Molina (Philips Research, The Netherlands)

##### **Dealing with False Alarms in Camera Surveillance**

Frank Kooi and Wietse Ledegang (TNO, The Netherlands)

**Eliciting Control Errors and Measuring Error Correlates**

Michael Lindenthal (University of Applied Sciences Münster, Germany)

**Watching People Making Errors: Vision Architectures for Monitoring Task Performance**

Marten den Uyl (VicarVision, The Netherlands)