

## Call for Papers

### SS06 - Challenges of Machine Learning in Intelligent Technical Systems

#### Organized and Co-Chaired by

Diana Göhringer<sup>1</sup>, Christoph-Alexander Holst<sup>2</sup>, Alexander Maier<sup>3</sup>, Anton Pfeifer<sup>2</sup>

<sup>1</sup>Technische Universität Dresden

<sup>2</sup>inIT – Institute Industrial IT

<sup>3</sup>Bielefeld University of Applied Sciences

❖ **FOCUS.** Machine Learning techniques have achieved outstanding performances in numerous computing problems. But the requirements of technical and industrial systems — such as production machines, assembly lines, robotic automation, transport vehicles, or imaging systems — still pose considerable challenges. In these systems, data-driven machine learning methods have to cope with imperfect data due to uncertainties, imprecision, conflict, incompleteness, low quality, and sparsity. On the other hand, technical and industrial systems require learners and models which are able to run in real-time, on limited hardware, are interpretable, robust, highly accurate, adaptable, safe, and secure. The duality of imperfect data and simultaneously high demands makes it particularly challenging to engineer successful machine learners for intelligent technical systems.

#### ❖ TOPICS

- ❖ Interpretable and Explainable Machine Learning Models
- ❖ Robust Machine Learning in Light of Uncertain and Error-prone Data
- ❖ Adapting Models in Non-stationary Environments
- ❖ Learning on Streaming Data
- ❖ Machine Learning on Resource-limited Hardware
- ❖ Predictive Maintenance and Remaining Useful Life
- ❖ Information Fusion
- ❖ Cognitive Computing
- ❖ Reinforcement Learning in Industrial Environments

❖ **AIM.** This special session aims to address and improve upon the state of the art on machine learning in industrial and technical systems. We encourage submission of papers on advanced machine learning methods that identify challenges in technical applications and demonstrate the potentials — but also limitations — of novel approaches. Supported technical applications range from, but are not limited to, predictive maintenance and analytics, quality management, product design, assistance systems, optimization, and computer vision.

❖ **CONFERENCE FORMAT.** The conference will comprise multi-track sessions for regular papers, to present significant and novel research results with a prospect for a tangible impact on the research area and potential implementations, as well as work-in-progress (WiP) and industry practice sessions.

#### ❖ AUTHOR'S SCHEDULE (2021)

##### ❖ Regular and special sessions papers

Submission deadline ..... May 7  
Acceptance notification ..... June 4  
Deadline for final manuscripts ..... July 14

##### ❖ Work-in-progress/Industry practice papers

Submission deadline ..... June 11  
Acceptance notification ..... July 7  
Deadline for final manuscripts ..... July 14