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Special Session on

"Deep Learning as a mean for Enabling Self-Learning and Self-Optimizing Capabilities in Real-World Industrial Applications"

organized by

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Abstract of proposed special session:
   Recent progress in Deep Learning e.g. Deep Reinforcement Learning and Computer Vision can enable self-learning and self-optimizing capabilities in robotic and manufacturing systems. Nowadays in the context of Industry 4.0, manufacturing companies are faced by increasing global competition and challenges, which requires them to become more flexible and able to adapt faster to rapid market changes. Advanced robotic and manufacturing systems are enablers for achieving greater flexibility and adaptability, however, integrating such systems also becomes increasingly more complex. Thus, new methods for programming and optimizing the systems to accommodate the natural variation and complexity exhibited in real-world tasks are needed. Deep Learning may provide the means to enable these "self-x" capabilities.

Brief description of the area of interest with special focus on why we should believe this is an interesting and significant topic?
   This special session focuses on research regarding the modelling, data, application and integration of recent progress within Deep Learning for intelligent robotic and manufacturing systems. Deep Learning is expected to improve the automatic decision-making process in advanced industrial processes with complex state spaces. The topic is interesting and relevant because we hear a lot about recent advances in Deep Learning since 2012, however, there is a lack in real-world industrial applications. The goal of this special session is to report and discuss recent research, real-world applications and future perspectives, and furthermore set and push the direction for seeing Deep Learning integrated in relevant real-world industrial applications.

Topics of interest include, but are not limited to:
- Robot programming through Imitation Learning or Inverse Reinforcement Learning
- Industrial process optimization with Deep Learning approaches
- Robot control optimization through Deep Reinforcement Learning
- Object and defect detection with Deep Learning
- Smart autonomous vehicles in industry (air, land, sea)
- Simulation modelling for Deep Learning training and validation
- Real-world case studies

Submissions Procedure: All the instructions for paper submission are included in the conference website https://sice-si.org/conf/SII2020/papersubmission.html.