



In the last decades, software systems become pervasive in almost all areas of society also growing in size, complexity, and functionality. This continuous growth demands the study, development and implementation of new Software Engineering (SE) methodologies and tools (e.g., software analysis and design, software portability, formal verification and validation, software measurement, and software maintenance) to build more reliable software. However, despite the introduction of innovative approaches and paradigms useful in the SE field, their technological transfer on a larger scale has been very gradual and still almost limited. This is due to the critical aspects in SE with respect to other well-founded engineering disciplines since SE is strongly influenced by social aspects (i.e., human knowledge, skills, expertise and interactions) that are highly context-driven, non-mechanical and strongly based on context and semantic knowledge. Human factor characterizes many of the problems associated with SE, including those observed in development effort estimation, software quality and reliability prediction, software design, and software testing. The rise of artificial intelligence (AI) has the potential to define effective approaches for improving software quality allowing a growth in the project success rates. AI can provide the capabilities to assist software teams in many aspects, from automating routine tasks to providing project analytics and actionable recommendations, and even making decisions where non-trivial context detection and information processing is needed. Recent works reported that several software engineering problems could effectively tackled using a combination of AI techniques such as NLP, machine learning, fuzzy logic, multi-objective search, metaheuristics and clustering algorithms. Starting from the above considerations, the objective of this special session is to foster the integration between SE and AI communities to improve research results, teaching and mentoring, and ultimately industrial practice. The special session will be inserted in the IJCNN conference and part of the proceedings of the whole held as a Virtual Conference, 18-22 July 2021.

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**Topics of interest include but are not limited to:**

- AI techniques and approaches for:
  - optimization, transformation and configuration management
  - software reuse, evolution, maintenance and refactoring
  - mining software repositories and categorization
  - reverse engineering and program comprehension
  - concurrent/parallel software development and maintenance
  - ontology and other semantic aspects in software engineering
  - business process management and business rules
  - aspect mining and pattern mining
  - cost analysis and risk assessment in software projects
  - model-driven development, domain modeling and software language engineering (e.g., DSL)
  - rapid prototyping
- Software Modeling techniques for explainable AI
- Tools for combining AI and SE
- Industrial Case Studies in SE Intelligence
- Benchmarks for SE Intelligence
- Intelligent Software Bots
- Intelligent agent-based software engineering
- Object-oriented and aspect-oriented approaches to implement and validate AI techniques and systems
- Formal methods for AI techniques
- AI for emerging paradigms and systems (e.g., big data, cloud computing and Internet of Things)
- Software for knowledge acquisition and representation
- Software metrics applied to AI techniques
- Intelligent Search engines
- User interfaces

**Organizers**

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**Important dates**

- **Submission deadline:** January 15, 2021
- **Notification:** February 19, 2021
- **Camera ready deadline:** March 20, 2021
- **Registration deadline:** March 27, 2021