

**Session ID:** AIM-2

**Title**

MACHINE LEARNING AND AI METHODS FOR RISK ANALYSIS OF MAJOR HAZARD PROCESS FACILITIES

**Convenors**

F. Paolacci <sup>1</sup>, O. Bursi <sup>2</sup>, M. Fragiadakis <sup>3</sup>

**Description**

This session aims to present and discuss recent technological developments and research findings in machine learning and AI methods for risk analysis of special-risk industrial facilities.

Based on the increasing interest in this domain, the European Association for Earthquakes Engineering, in the vest of Working Group 13, has recently devoted its effort to investigating and exploring interventions and strategies that pose a relevant contribution to prevention, preparedness and response to mitigate or significantly inhibit damage and loss consequences due to industrial accidents caused by natural hazards.

The outcome of the WG provides a contribution, for example, in:

- Seismic design procedures for special structures and components considering coupling interactions between the primary structural systems and the non-structural components, such as pipes, vessels, pumps and tanks.
- Design of critical non-structural components.
- Seismic safety evaluation, uncertainties and reliability analysis of facilities and subsystems through cutting-edge machine learning methods, i.e. metamodelling techniques.
- Fragility curves and probabilistic risk assessment of multi-component systems.
- Application of innovative passive and active seismic protection systems for facilities and their installations, such as seismic isolation, meta-foundations, energy dissipation systems and shut-down devices.

Hence, we welcome the submission of theoretical, numerical and experimental studies devoted to enhancing the seismic protection of the built environment and mitigating the seismic risk of industrial major hazard facilities.

**Invited Speakers**

S. Pezeshk <sup>4</sup>, S. Marelli <sup>5</sup>

**Affiliations**

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