

Stavanger ESREL SRA-E 2025
Special Session Proposal

Title:

Bayesian Networks Modelling for Reliability and Risk Assessment

Organizer(s):

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Motivation:

Bayesian Networks are used for reliability and risk assessment, because of their capability of explicitly modeling systems/components dependencies while accounting for the uncertainties in their (stochastic) behaviour and the related modelling of it.

Objective:

This special session aims at presenting the most recent advancements in Bayesian Network modelling for reliability and risk assessment, and the challenges and perspectives for its application in practice.

A list of methodological topics includes, but is not limited to:

- Multi-state Bayesian Networks
- Dynamic Bayesian Networks
- Uncertainty quantification in Bayesian Networks modelling
- Methods for the characterization of the Conditional Probability Tables (CPTs).

A list of applicative topics of Bayesian Networks includes, but is not limited to:

- Critical Infrastructures (e.g., power, water, communication, transportation, airports)
- Safety-critical systems (e.g., nuclear, chemical, Oil&Gas)
- Aeronautics and Space engineering (e.g, airplanes, helicopters,...)
- Civil Engineering (e.g., bridges, roads, dikes, ...)
- Healthcare Systems
- Cyber-Physical Systems
- Human reliability
- Ecological systems
- Climate change