Learning Operator Interaction from Alarm and Process Data Traces (SA/MA)

Lehrstuhl für Automatisierung und Informationssysteme
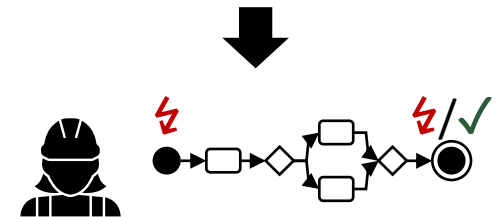**Technische Universität München**
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Task Description:

Industrial production machine emit alarms to inform operators about process conditions. In addition, sensor values and state information of the machine are recorded as process data. Previous work shows that Bayesian structure learning uncovers recurring sequences of alarms. Thereby, multiple alarms in a sequence indicate that the operators did not properly fix the original fault.

Your task is to combine the alarm sequence detection described above with process data and expert knowledge about the machines of our partner company Somic. Thereby, you shall automatically generate state charts or behavior trees describing the historical interactions of human operators with the machine and contrast this with Somic's expected troubleshooting behavior. Your work shall include a visualization of the operator behavior.

Preliminaries:

- Experience and knowledge in machine learning and statistics
- Knowledge about industrial automation and IEC 61131-3 programming
- Independent and self-reliant work ethic

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