

# Petri Net Formalisms for Attacks Detection in Networked Control Systems

## Ecole SED'25

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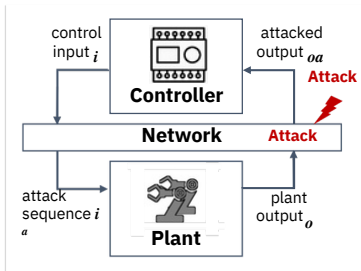
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# Motivation and objectives



- Spatially distributed components.
- Network vulnerable to cyber-attacks.

Objective: Develop cyber-attack detection tools in the framework of timed DES.



# MENACES: Timed Event-Based Methods for Networked Control Systems Security



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Context: **integrity** cyber-attacks



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1. Time/Timed modelling

2. Timed verifier/observer/detector

# Timed Output Synchronized Petri Nets<sup>1</sup>

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<sup>1</sup>Mouna Gaouar, Rabah Ammour, Isabel Demongodin, and Dimitri Lefebvre. “Timed Output Synchronized Petri Nets and basics of Synchronized State Class Graph”. In: 19th Workshop on Discrete Event Systems (WODES’24). 2024.

To capture the synchronized behavior of the plant.

# Timed Output Synchronized Petri Nets<sup>1</sup>

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To detect logically **stealthy** cyber-attacks.

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Thank you for your attention!