

Artificial Intelligence in Cyber Physical Systems

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Abstract: *This research paper explores the symbiotic relationship between Artificial Intelligence (AI) and Cyber-Physical Systems (CPS), where CPS are computational systems closely intertwined with physical processes through sensors and actuators. AI techniques, particularly machine learning, are pivotal in enhancing CPS functionalities, including data analysis, decision-making, optimization, and autonomous control. The paper delves into various applications of AI in CPS, highlighting its transformative potential in bolstering system performance, reliability, and resilience.*

Furthermore, the paper addresses pressing concerns regarding security and privacy within CPS environments. Through a detailed classification of security and privacy threats, it offers an organized overview of potential risks and economic implications, facilitating effective risk assessment. The study demonstrates how AI can mitigate these concerns by presenting a step-by-step flowchart utilizing AI and Machine Learning (ML) techniques for security and privacy issue detection within CPS.

Moreover, the paper conducts a comprehensive literature review on current and future challenges surrounding AI implementation in CPS. It outlines potential developments and advancements, shedding light on the trajectory of AI in the realm of Cyber-Physical Systems.

Keywords: Artificial Intelligence, Cyber Physical System, Machine Learning, risk mitigation, autonomous systems

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