ARTIFICIAL INTELLIGENCE

PNRR - Enhancing Embedded Architecture Security in Automotive Systems through Artificial Intelligence

Funded By	MINISTERO DELL'UNIVERSITA' E DELLA RICERCA [P.iva/CF:97429780584] Politecnico di TORINO [P.iva/CF:00518460019]
Supervisor	DI CARLO STEFANO - stefano.dicarlo@polito.it
Contact	SAVINO ALESSANDRO - alessandro.savino@polito.it DI CARLO STEFANO - stefano.dicarlo@polito.it
Context of the research activity	Study on leveraging artificial intelligence (AI) techniques to enhance the security of embedded architectures in automotive systems. Progetto finanziato nell'ambito del PNRR. PNRR M4C2, Investimento1.3 - Avviso n. 341 del 15/03/2022 - PE0000014 Security and Rights in the CyberSpace (SERICS) - CUP E13C22001850001
Objectives	As automotive systems become increasingly complex and interconnected, ensuring the security of embedded architectures becomes a critical concern. This research abstract proposes a study on leveraging artificial intelligence (AI) techniques to enhance the security of embedded architectures in automotive systems. By incorporating AI algorithms and machine learning models, this research aims to develop novel solutions for proactive threat detection, anomaly detection, and vulnerability analysis specific to automotive embedded systems. The study will explore the integration of AI-driven techniques into the design and implementation of automotive embedded architectures to detect and mitigate security threats, including software vulnerabilities, unauthorized access, and intrusion detection. Through experimental evaluations using realistic automotive scenarios and datasets, the effectiveness and performance impact of the proposed AI-driven security framework will be assessed. The expected outcome of this research is to contribute towards developing more secure and resilient embedded architectures in automotive systems, thereby enhancing the safety and reliability of next-generation intelligent vehicles.
Skills and competencies	Candidate must possess a combination of technical skills, knowledge, and research capabilities: - Proficiency in automotive embedded systems architecture - Knowledge of security principles and threat modeling

competencies for the development of the activity	- Strong understanding of AI and ML techniques and algorithms - Proficiency in theoretical statistics, data analysis techniques, and visualization tools - Proficiency in programming languages for embedded systems - Skills in software development, testing, and debugging in embedded systems.