28 FEBRUARY 2025

NEWSLETTER 2/2025

TALON PROJECT

TALON

Autonomous and self-organised artificial intelligent orchestrator for a greener industry 5.0

talon-project.eu

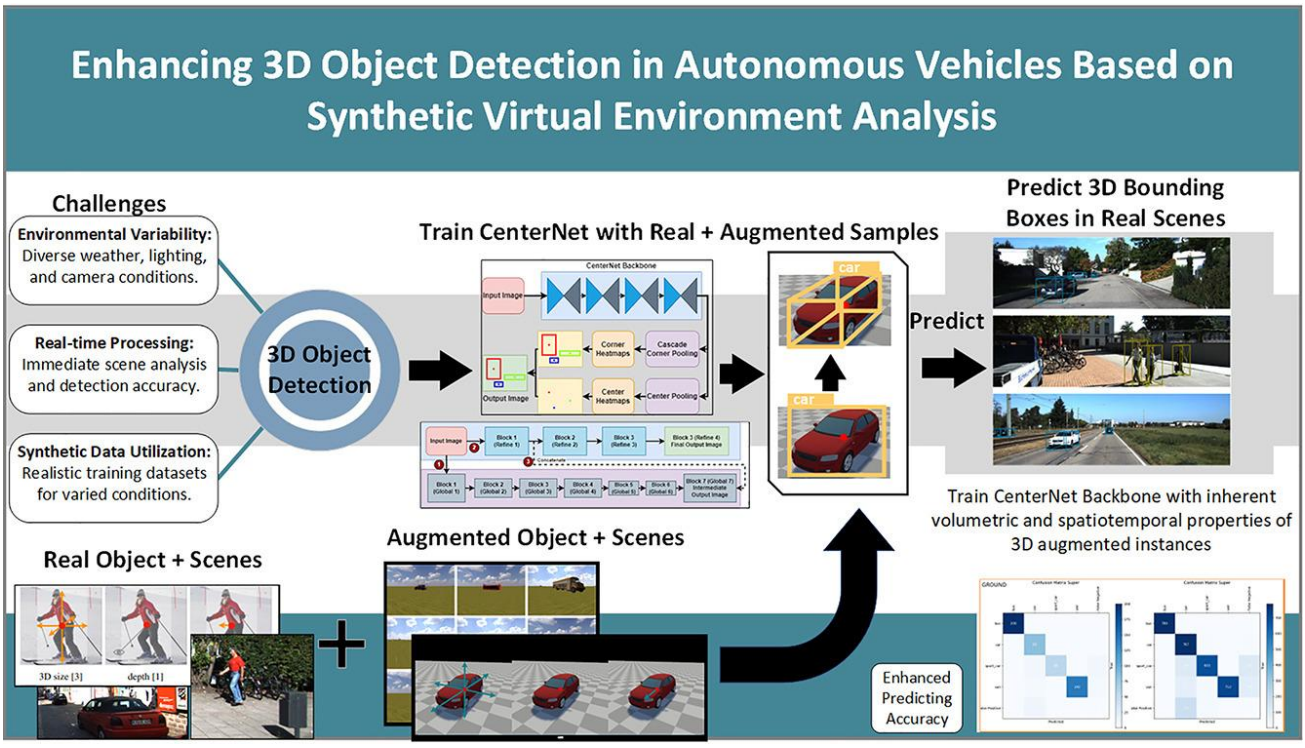
EDITORIAL

This newsletter presents a summary of the primary dissemination outcomes of the project, which include organization of events and technological developments. Specifically, one (1) publication, one (1) participation in a live event, and one (1) insight by TALON partners.

Stylianos Trevlakis, InnoCube

ENHANCING 3D OBJECT DETECTION IN AUTONOMOUS VEHICLES BASED ON SYNTHETIC VIRTUAL ENVIRONMENT ANALYSIS

Abstract: Autonomous Vehicles (AVs) rely on real-time processing of natural images and videos for scene understanding and safety assurance through proactive object detection. Traditional methods have primarily focused on 2D object detection, limiting their spatial understanding. This study introduces a novel approach by leveraging 3D object detection in conjunction with augmented reality (AR) ecosystems for enhanced real-time scene analysis. Our approach pioneers the integration of a synthetic dataset, designed to simulate various environmental, lighting, and spatiotemporal conditions, to train and evaluate an AI model capable of deducing 3D bounding boxes. This dataset, with its diverse weather conditions and varying camera settings, allows us to explore detection performance in highly challenging scenarios. The proposed method also significantly improves processing times while maintaining accuracy, offering competitive results in conditions previously considered difficult for object recognition. The combination of 3D detection within the AR framework and the use of synthetic data to tackle environmental complexity marks a notable contribution to the field of AV scene analysis.



TALON'S PLENARY MEETING

🚀 TALON project is redefining the future of Artificial Intelligence with a flexible, adaptive, and programmable architecture that optimizes AI at the edge vs. AI in the cloud, maximizing system performance.

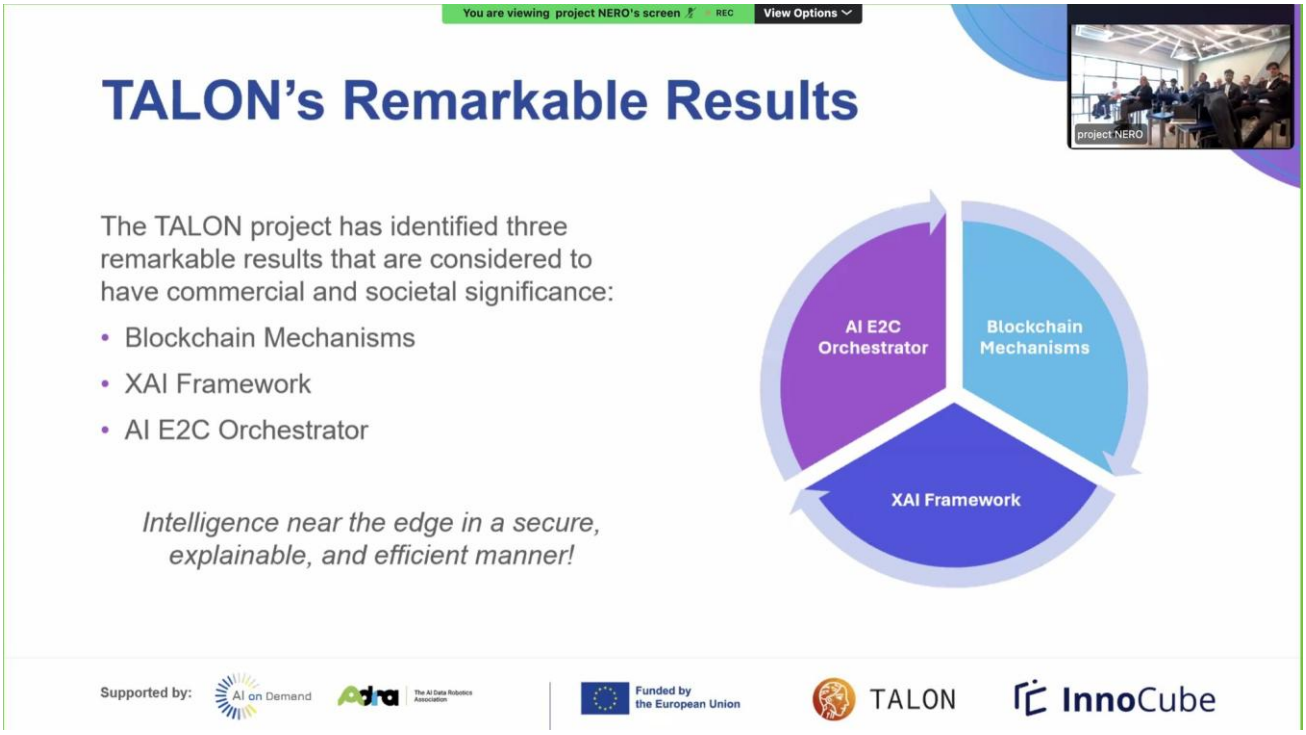
The key pillars of TALON for revolutionizing Industry5.0 are:

- AI Orchestrator | Brings intelligence directly to sensors in embedded systems, even in environments with limited computing, storage, and communication resources.
- Edge-cloud optimization | Balances centralized, distributed, and hybrid intelligence to adapt to diverse use cases and achieve maximum efficiency.
- Transformation of AI networks | Develops low-power computing systems that leverage underutilized business and enterprise resources.
- Advanced security | Provides end-to-end personalized privacy with Blockchain technology.
- New theoretical framework | Experimentally validated to support TALON's unique architecture.

💡 During the plenary session, the collaborative atmosphere was inspiring, with passionate discussions, strategic brainstorming sessions, and a strong commitment to innovation.

🙌 From FactorEngineering, we thank all partners and participants for their dedication and contributions. Together, we are not only optimizing resources, but pushing TALON forward as a true game-changer in Industry5.0, creating a smarter, safer, and more sustainable future.

FUTURE-READY: ON DEMAND SOLUTIONS WITH AI, DATA, AND ROBOTICS



🚀 Thrilled to Share Our Experience at the "Future-Ready: On-Demand Solutions with AI, Data, and Robotics" Event!

This week, the TALON project had the honor of participating in the "Future-Ready: On-Demand Solutions with AI, Data, and Robotics" event organised by Adra-e and AI4Europe.

Industry leaders and innovators explored the frontiers of AI, robotics, and data-driven solutions.

Stylianos E. Trevlakis (InnoCube P.C.) presented the TALON project's journey on the 18th of Feb in Brussels. The insights gained will propel TALON's mission to deliver transformative, on-demand solutions.

🔗 Stay connected as we tackle these challenges head-on and continue shaping the future!

TALON

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