SmartEdge project marks first year of pioneering edge intelligence

https://smart-edge.eu/ - 11 April 2024 - The SmartEdge project, supported by the European Union, has completed its first year, focusing on advancements in edge computing and Internet of Things (IoT) integration. The initiative aims to develop tools and methodologies to facilitate the construction of edge intelligence solutions.

Following this initial period, all project partners have successfully established methods and tools designed to be applied across five distinct use cases. These use cases are central to demonstrating the project's applicability in real-world scenarios and include smart factories, health monitoring, road intersection safety, manufacturing innovation, and driving assistance. Each use case aims to leverage edge computing and IoT to address specific challenges and optimize processes within its domain:

1. Smart factories: Development of mobile robot swarms and edge devices for environmental adaptation and collaboration.
2. Health monitoring: Real-time health assessments in nursing homes using IoT swarms and wearable technology and active body physiotherapy exercises.
3. Road intersection safety: Swarm intelligence for traffic management and the reduction of rear-end collisions.
4. Manufacturing innovation: Low-code and edge intelligence integration for flexible production and individualized manufacturing.
5. Driving assistance: Advancements in ADAS through innovative technologies for test case generation and cooperative perception.

Developments in Low-Code Programming and Semantic Integration

The SmartEdge toolchain is designed to reduce complexities across software, hardware, and networking. It employs semantic technologies to foster a unified data model, easing the integration of IoT devices and applications. This includes the introduction of low-code programming tools for edge intelligence, featuring semantic-driven sensor fusion, methods for enhancing cloud-edge interactions, adaptive coordination and optimization solutions, and a comprehensive toolchain for device-edge-cloud integration.

Continuous semantic integration (CSI)

A significant achievement is the development of the Continuous semantic integration (CSI) framework. CSI standardizes access to IoT device data, incorporating semantic metadata to streamline application development across various sectors. It supports domains such as smart traffic management, smart manufacturing, and healthcare monitoring by offering standardized semantic interfaces for a broad array of devices.

Dynamic and secure swarm networking

The project has made strides in the dynamic discovery, security, and formation of network swarms. These advancements are aligned with SmartEdge's objectives of improving management, security, and operational speed in network operations. Innovations include ultra-low latency networks for time-sensitive applications, machine learning-based security mechanisms, and distributed computing capabilities, highlighting the project's commitment to scalable edge intelligence.

For more detailed information about the SmartEdge project and its future endeavors, please visit https://smart-edge.eu/

About SmartEdge

SmartEdge is a European project on semantic low-code programming tools for edge intelligence, with use cases in manufacturing, automotive, city traffic, and healthcare. The project benefits from the collaborative efforts of consortium members including nine industrial partners (Dell Technologies, Siemens, Bosch, IMC, Conveqs, Cefriel, Mellanox, IMC.SK, NVIDIA), along with eight research institutes (CNIT, Aalto University, TU Berlin, University of Oxford, Fraunhofer FOKUS, Université de Fribourg, HES-SO, ERCIM) and a standards body (W3C). This project is supported by the European Union’s Horizon RIA research and innovation programme under grant agreement No. 101092908 (SMARTEDGE).