AI4DI Newsletter No.4

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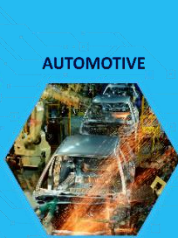
INDUSTRIAL
MACHINERY

SEMICONDUCTOR

FOOD AND
BEVERAGE

TRANSPORTATION

Newsletter No.4
August 2021

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OVERVIEW

Start date:	1 May 2019
Duration:	43 months
Total budget:	30 M€
EU budget contribution:	8.8 M€
National budget contribution:	8 M€
Number of participants:	41

About AI4DI

AI4DI's mission is bringing AI from the cloud to the edge and making Europe a leader in silicon-born AI by advancing Moore's law and accelerating edge processing adoption in different industries through reference demonstrators.

AI4DI objective is to research and develop AI technologies implemented to different industrial sector applications and deployed under conditions as close as possible to real-life.

The project aims to enhance processes based on repetitive tasks, focusing on replacing process identification and validation methods with intelligent technologies across industries such as automotive, semiconductor, machinery, food and beverage, and transportation.

The project's goal is to provide AI-based technologies at the edge for digitising the industry by reducing costs, saving time, and increasing quality by enhancing industrial processes.

The project's advancements enable optimising/improving the industrial processes, products, services, and support building and sustaining a dynamic AI technology ecosystem in Europe.

Key Digital Technologies (KDT) - A New European Partnership to Further Speed Up the Transition to Green and Digital Europe

The KDT European Partnership builds on the current Electronic Components and Systems for European Leadership Joint Undertaking (ECSEL JU), established in 2014 to keep Europe at the forefront of technology development in electronics.

Today Europe accounts for approximately 9-10% of global production – up from 6% five years ago thanks to the EU ECSEL, which has been instrumental in reversing this trend.

KDT will support the digital transformation of all economic and societal sectors, make the transformation work for Europe and support the European Green Deal by contributing towards the EU's target of becoming the world's first climate-neutral continent by 2050. The partnership is one of the actions planned by the European Commission, Member States, and industry on processors and semiconductor technologies. The KDT Partnership aims are to:

- Provide innovative electronic components and systems, software and smart integration to digital value chains, providing secure and trusted technologies tailored to the needs of user industries and citizens to support and reinforce Europe's potential to innovate.

- Develop and apply these technologies to address significant global challenges in mobility, health, energy, security, manufacturing and digital communications. This contributes to and strengthens Europe's scientific and technological bases.

- Better align research, innovation and industrial policies for a joint approach in mastering these drivers of innovation.

The European Commission proposed a financial contribution of €1.8 billion between 2021-2027 for the KDT partnership. The participating Member States make an equal contribution, while industry, research organisations, academia etc., contribute roughly €2.5 billion via the industrial associations AENEAS, ARTEMIS-IA (INSIDE) and EPoSS.

AI4DI WEBINARS

During the project's second year, the AI4DI consortium held three webinars, presenting the project's work to a broader public.

The webinars presented the topics of artificial intelligence for automotive manufacturing, mobility-as-a-service, semiconductor, machinery industries, and smart food and beverage production.

During the webinars, the speakers focused on innovation and progress in AI, and provided valuable insights on current technologies and a glance into the future.

The recorded Webinars are available here:

- **AI for Automotive Manufacturing and Mobility-as-a-Service**
- **AI for Semiconductor and Industrial Machinery Industries**
- **AI for Smart Food and Beverage Production**

AI4DI WEBINAR no2: AI for Semiconductor and Industrial Machinery Industries
26th of March 2021

Webinar Keynote speaker Prof. Wolfgang Ecker, Infineon:

"We have to be multidisciplinary. It's not just Artificial Intelligence, it's application know-how, it's process know-how, know-how of the consequences, and know-how of the technology."

AI4DI at Events - Highlights

VTT representatives presented the AI4DI project during the virtual Automotive Sensors and Electronics event in April 2021. the presentation was focused on the artificial intelligence in automotive-sensing challenges and solutions, and presented the project's work in Supply Chain 5. During the event, the experts in the field will focus on the advanced development of automotive sensor and electronics technologies, their components, and applications to enrich vehicle performance, safety, and driver experience and to enable the next level of sensing in highly automated driving. More information about the event can be found in the following **link**.
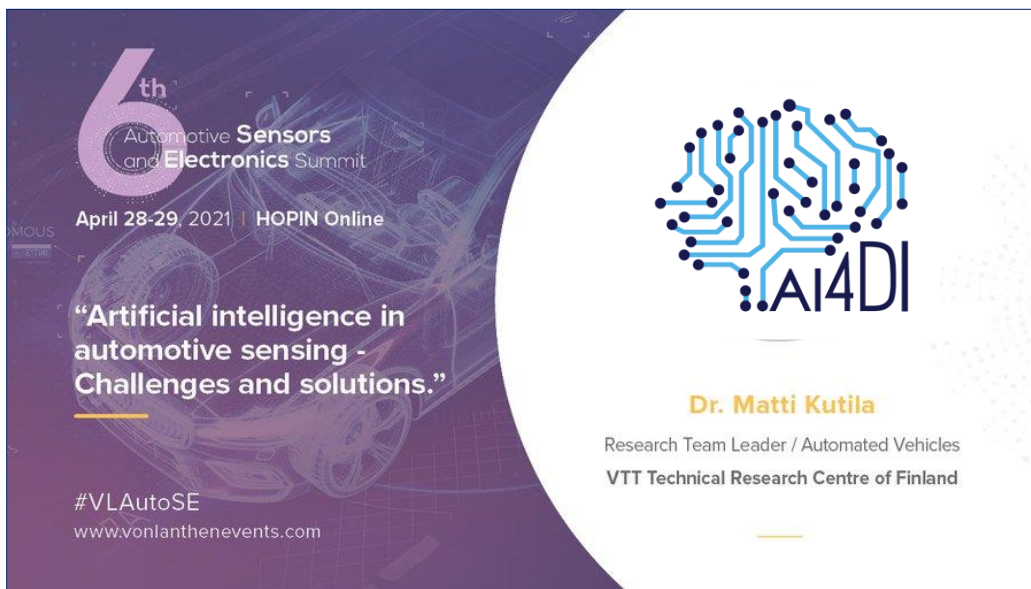
TTTech Computertechnik AG presented the predictive health-monitoring system for machines from the AI4DI project in their workshop on Manufacturing Industrial IoT and Edge Node Use Cases in April 2021.

Franken-Pommery, University of Reims, and STMicroelectronics presented the AI4DI work during the ADTC2021 conference, with speeches on "Efficient Deep Learning Approaches for Fault Detection in the Semiconductor Industry", "IoT and AI for Wine and Champagne Industry", and "AI-Assisted Harvest Assessment on the Champagne Vineyards: challenges and advances".

The European Nanoelectronics Applications, Design & Technology Conference focused on electronic components, electronic system design, design automation, and manufacturing topics related to micro- and nanoelectronics, which are critical to success for many European companies.

Exhaustive research and development in this area have been supported by EUREKA, H2020, and local governments in recent years.

This conference highlighted the exciting and promising results primarily from the CATRENE, PENTA, ECSEL/ENIAC, & H2020 projects. More information about the event can be found in the following **link**.


AI4DI joins the ECSEL Industry4.E lighthouse

The Industry4.E Lighthouse has a focus on all means of microelectronics and ICT for the Digital Industry.

Operating across project, funding, and national boundaries, Industry4.E is expected to bring together relevant RDI projects funded across various funding programmes helping them to connect and enlarge the end-user/stakeholder community.

In this context, AI4DI has joined the initiative to support building and sustaining a dynamic AI technology ecosystem in Europe and promoting the roadmap on AI-based technologies, exploitation studies, and business cases supporting accelerating the adoption of AI hardware and software solutions by the European industry.

Presentation of AI4DI at Industry4.E | Bringing Projects Together | Workshop on Thursday 11ᵗʰ of March 2021
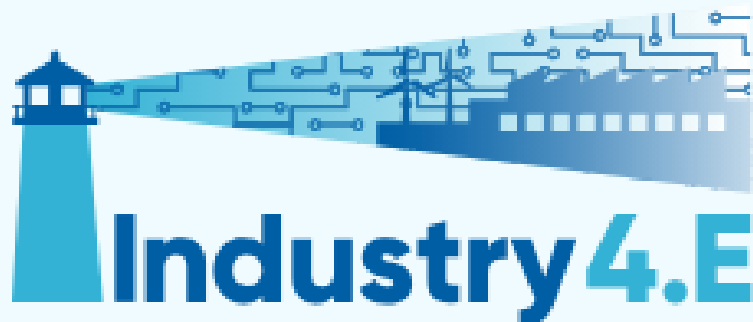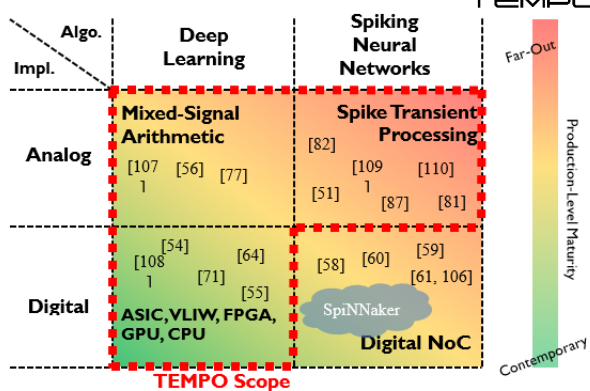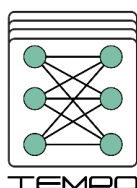
ANDANTE Project:

Edge computing is creating new possibilities in Internet of Things (IoT) applications. To create the foundations for future products in the edge IoT domain, the EU-funded ANDANTE project aims to leverage innovative hardware platforms to build strong hardware and software platforms for artificial and spiking neural networks. These technologies will combine extreme power efficiency with robust neuromorphic computing capabilities. By achieving efficient cross-fertilization between major European foundries, chip design, system houses, application companies and research partners, the project will build and expand the European ecosystem around the definition, development, production, and application of neuromorphic hardware. The project's work will promote innovative hardware and software deep-learning solutions for future products that combine extreme power efficiency and robust cognitive computing capabilities in the Edge.

More information about the project: https://www.andante-ai.eu/
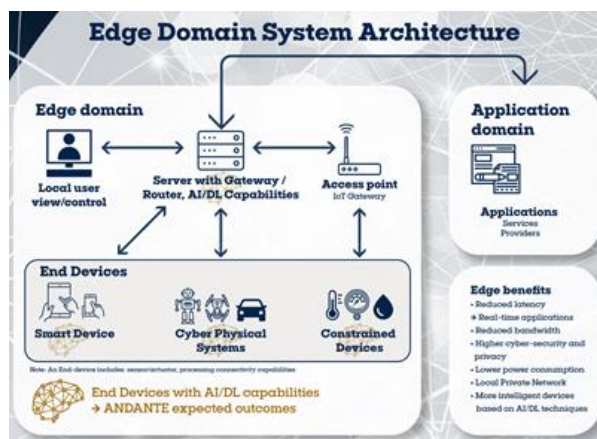
TEMPO Project:

EU project TEMPO (Technology & hardware for nEuromorphic coMPuting) targets low-power chips for AI applications based on emerging memory technologies. The fundamental goals of the TEMPO project are to broaden the applicability of integrated neuromorphic hardware by improving energy efficiency with emerging memory technologies in novel neuromorphic hardware implementations and to develop technology platforms for emerging semiconductor devices and demonstrate them for the energy efficient hardware implementation of neuromorphic workloads. The objective of TEMPO is to build a European ecosystem around the development, production and application of neuromorphic hardware through an efficient cross-fertilization between major European foundries, chip design, system houses, application companies and research partners.

More information about the project: https://tempo-ecsel.eu/

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