EDGE AI Newsletter

Volume 7, Issue 1
October 2024

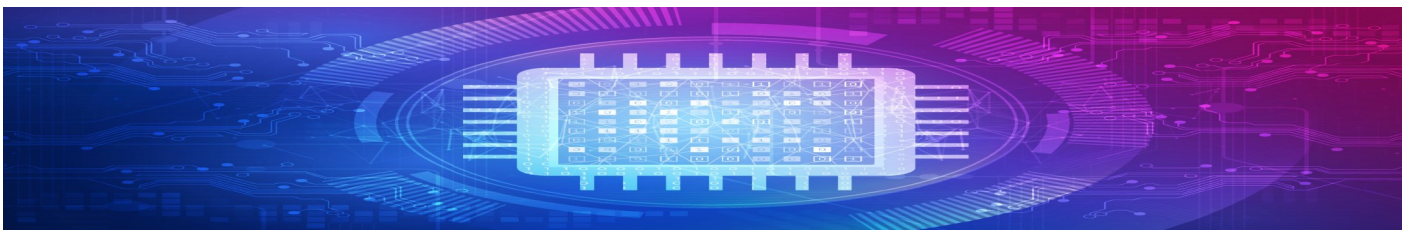
European Conference on EDGE AI

European Conference on EDGE AI Technologies and Applications – EEAI, 21-23 October 2024, Cagliari, Sardinia, Italy

The **European Conference on EDGE AI Technologies and Applications – EEAI** at the Hotel Regina Margherita, Cagliari, Sardinia, Italy, is co-organised by the large-scale KDT JU EdgeAI project in cooperation with the CLEVER, REBECCA, TRISTAN, NEUROKIT2E, LoLiPoP IoT projects, ECSEL JU ANDANTE, AI4CSM, AI4DI, TEMPO and INSECTT projects to provide a platform to exchange knowledge and ideas among experts and professionals interested in advances in AI circuits and device design, AI hardware architectures, industrial edge AI technologies, toolchains, and applications.

The conference addresses the edge AI foundations, applications, algorithms, software, communication networks, and systems. It allows showcasing the latest advancements in these areas, providing an arena for debating/identifying future directions and challenges. The program spans three days, with a plenary session starting each day and parallel sessions covering four to six topics daily.

The event welcomes representatives for academia, researchers, and industry practitioners to exchange the latest fundamental advances in the state of the art and practice of edge AI technologies and applications, identify emerging research topics, and define the future of edge AI research and innovation.



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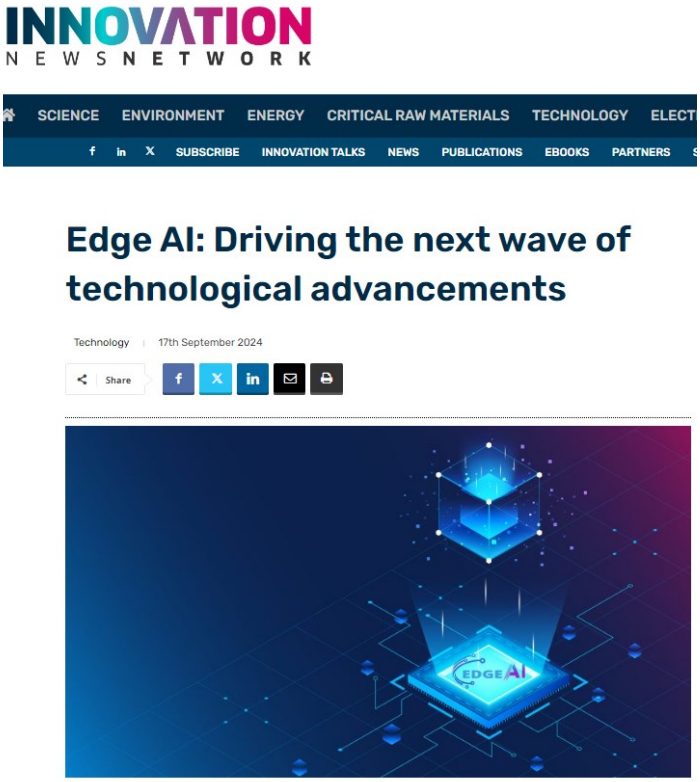
Innovation News Network

EdgeAI Article in the Innovation News Network

The EdgeAI project is published an article on the Innovation Network website and promoted across social media channels. The item will also be presented in the December Innovation Platform Issue 20.

The article delves into the world of Edge AI, a technology that brings artificial intelligence closer to the data source, offering significant advantages. By processing data locally, Edge AI reduces latency, bandwidth requirements, and power consumption while enhancing security and data protection. This technology is crucial for real-time applications in various industries, as it enables devices to respond promptly to situations without relying on centralized cloud or server communication.

The article explores the benefits of Edge AI, including improved processing speeds for real-time analytics, greater scalability to handle real-time data, and enhanced cybersecurity due to on-premises data processing. It also discusses the Chips JU EdgeAI project, a European initiative aimed at advancing Edge AI technologies and applications. The project focuses on developing AI solutions across the technology stack, from hardware to software, and supports the creation of a dynamic European ecosystem for Edge AI.



Overall, the article provides a comprehensive overview of Edge AI, its benefits, and its potential to drive technological advancements in various sectors. It highlights the importance of Edge AI in the digital age and its role in shaping the future of technology.

Edge AI: Driving the next wave of technological advancements (innovationnewsnetwork.com)

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Introduction to the EdgeAI Technology Demonstrators

The technology demonstrators presented in this section showcase innovative advancements in edge AI, offering solutions to various challenges and opportunities.

TD1: Approximate Computing for Federated Learning

This demonstrator showcases a novel approach to enhancing federated learning efficiency and privacy by integrating approximate computing techniques. By optimizing resource usage without compromising accuracy, this technology offers a promising solution for edge AI systems.

TD2: Microcontroller Design with Capacitive Sensor Array and Autonomous On-Device Training System with Hardware Acceleration

This project demonstrates a low-power, energy-efficient edge AI system capable of autonomous on-device training. Equipped with a capacitive sensor array and hardware acceleration, this system is designed for real-time processing in various applications.

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Introduction to the EdgeAI Technology Demonstrators

TD3: Language Model for Source Code Analysis

This demonstrator introduces a domain-specific language model for source code analysis using graph neural networks. By converting LLVM-IR code into graph representations, the model can effectively classify code for device mapping.

TD4: Exploitation of Sparse Semantic Streaming Registers for SNN

This technology block focuses on optimizing spiking neural network simulations through the use of sparse semantic streaming registers. By efficiently managing neuron communication, this approach aims to reduce computational overhead and enhance processing speed.

TD5: Neuromorphic Accelerator Exploiting Non-Volatile Memory Technology

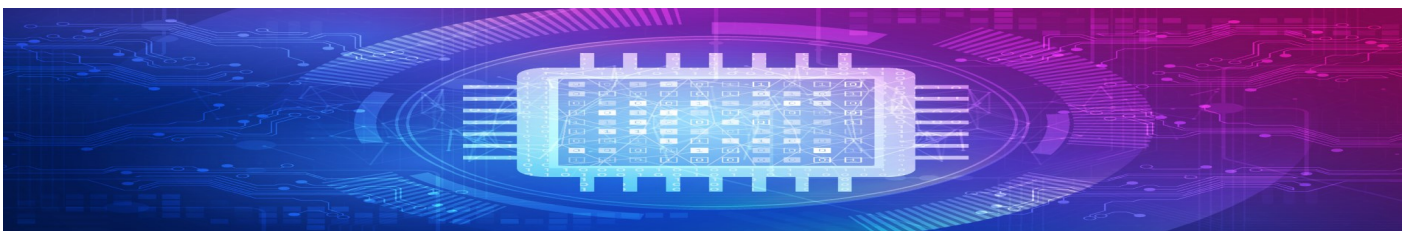
This demonstrator showcases a neuromorphic accelerator designed for ultra-low energy consumption in AI applications. Utilizing advanced FDSOI CMOS technology and non-volatile memory, this accelerator offers promising solutions for various tasks.

TD6: Vision Foundation Models at the Edge

This technology demonstrator explores the deployment of efficient vision foundation models on edge devices. By improving architectural efficiency and data robustness, this approach aims to enable large AI models to operate effectively in edge environments.

TD7: MMV Timer Neuron Keyword Classification

This project demonstrates real-time, energy-efficient keyword classification using MMV timer neuron networks on ASIC or FPGA platforms. By optimizing energy consumption and processing time, this technology offers a promising solution for various applications.



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https://edge-ai-tech.eu/

EdgeAI

@EdgeAI

EdgeAI Key Facts

Start: 01 December 2022

Duration: 37 months

Budget: 35,43 M€

Coordinator: SINTEF AS

Consortium: 48 partners

Consortium

SINTEF, Infineon, ams OSRAM, SoftwareCUBE, TU Wien, imec, NXP, GNT, NEURO Controls, COGNITION FACTORY, IMST, Universität zu Lübeck, scm group, ST life.augmented, VRANKEN POMMERY, TECHNEXT, cea, Grenoble INP UGA, Université de Reims Champagne-Ardenne, cnrs, Université Polytechnique Hauts-de-France, Χαροκοπειο Πανεπιστημιο Harokopio University, HTS High Technology Systems, Intelligent Machines IoT & Cyber Physical Systems DeepSensing S.R.L., Xtremion, Università degli Studi di Cagliari, Alma Mater Studiorum Università di Bologna, Università degli Studi di Milano, Elektronikas un datorzinātnu institūts Institute of Electronics and Computer Science, signify, Technolution, almende, TU/e, Fredrikstad energi, NxtEnergy, PROLUX, nxtech, itml innovation applied, Convergence, SynSense

Disclaimer

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