

Applied AI Solutions on Edge Devices

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Call for submission. This editorial introduces the first issue of 2023 for *Embedded Selforganising Systems (ESS)* journal. The focus of this issue is the deployment of AI solutions in robotics and embedded systems.

Our journal uses electronic publication, which provides a flexible way to submit and review contributions of authors from all countries. The advantages of such an e-journal are multifarious. In comparison to traditional paper journals, we replace the classic review and creation process with a new sliding issue model. Each issue starts with an initial editorial and an official call for papers. The submitted articles will be reviewed and, if accepted, published as soon as the final version is received by the committee. Based on this process, each sliding issue can be filled successively until the maximum number of articles is reached. During this period, all accepted papers can, already be read by other researchers while other papers are still in the reviewing process. Accordingly, the time to publish shrinks to a minimum. In addition, multiple issues with different focus can co-exist at the same time, which provides completely new possibilities to react on latest research topics. The journal also allows the integration of discussions and other reactions on published articles in the same journal issue.

We are welcoming fresh ideas, on-going research technical reports and novel scientific works. We also intend to create a promising platform for creative and constructive discussions.

Applied AI Solutions on Edge Devices

Artificial intelligence is affecting almost every aspect of human life in the future. It is already the primary driving force behind the development of technologies such as Big Data, robotics and the Internet of Things (IOT). In fact, it is expected to remain a major technological innovator for the foreseeable future. Today, artificial intelligence (AI) is revolutionizing the world's largest scientific communities and industries. Edge AI is enabling new business outcomes in every sector, including manufacturing, healthcare, financial

services, transportation, and energy. Deep learning and machine learning are at the heart of the ongoing artificial intelligence revolution, spanning areas such as visual inspection, object recognition, speech recognition, language translation, and decision making.

Traditionally, AI solutions were cloud- or high-performance computing platform-driven and demanded powerful hardware to perform deep-learning / machine learning computational tasks and scale resources effortlessly. However, this involved offloading data to external computing systems for additional computations, which degraded latency, led to higher communication costs, boosted energy consumption, and triggered privacy concerns. Moreover, Inference is a comparatively less computationally demanding task than training, in which latency is more significant in delivering real-time results for a model. The majority of inference is still performed in the cloud or on a dedicated server, but through the increasing diversity of AI applications, the centralized training and inference paradigm is being challenged.

Edge computing means delegating data processing tasks as close as possible to the data sources which run locally on the consumer's devices. This enables real-time data processing through very high speed and makes the system work more efficiently, without relying on any external resources. Nowadays, it has become feasible and easier to perform AI and machine learning through analytics at the edge platforms, depending on the edge size and complexity, as well as the particular system being deployed. Despite edge computing systems being much smaller than those in centralized data centers, they are now sophisticated and can handle many workloads successfully due to the tremendous growth in processing power of today's x86 commodity servers. It is remarkable how many workloads can now be successfully executed at the edge.

The Embedded Self-organizing Systems (ESS) journal comprises a set of carefully selected tracks that focus on the particular challenges regarding applied deep

Embedded Selforganising Systems

learning and machine learning solutions on edge devices. Topics of this issue include (but not limited to):

- Intelligence inference in edge computing platforms.
- Development and deployment of AI applications in IoT and robotics domains.
- Deployment of machine learning solutions on-chip and at the edge.
- Edge AI for real-time data analytics (image/video/sound/time-series)
- Automotive software applications and solutions
- AI solutions for drone technology
- Explainable Artificial Intelligence
- Applied Intelligence for Cyber Security
- AI and ML-based optimization methods for industrial or practical applications
- Computer Vision and Robotics
- Intelligent User Interfaces
- Machine learning and artificial intelligent systems analysis, modeling, simulation, and application in computer vision.

SUBMISSION INSTRUCTIONS

Submissions for the journal must be made as complete papers (there is no abstract submission stage) submitted as PDF documents. Authors are requested to submit papers reporting original research results and experience. The page limit for regular papers is 4 to 6 pages and short papers are from 2 to 4 pages. Papers should be prepared using the IEEE two-column template. An MS Word template or ESS online journal is available here <https://www.bibliothek.tu-chemnitz.de/ojs/index.php/cs/information/authors>

Papers should submit following link of journal:

<https://www.bibliothek.tu-chemnitz.de/ojs/index.php/cs/about/submissions>

Submission Deadline: 30.06.2023

Review in 2 weeks after submission.

Camera ready paper for publication should be submit in 2 weeks after review notes.

Thanks in advance for Your Contribution!