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DeployAI to Deliver Interoperability of Cloud and HPC Resources for Earth Observation in the Context of the European AI-on-Demand Platform

Antonis Troumpoukis, Iraklis Klampanos, and Vangelis Karkaletsis

NCSR "Demokritos", Institute of Informatics and Telecommunications, (antru@iit.demokritos.gr)

The European AI-on-Demand Platform (AloD, <http://aiod.eu>) is a vital resource for leveraging and boosting the European AI research landscape towards economic growth and societal advancement across Europe. Following and emphasising European values, such as openness, transparency, and trustworthiness for developing and using AI technologies, the AloD platform aims to become the main one-stop shop for exchanging and building AI resources and applications within the European AI innovation ecosystem, whilst also adhering to European values. The primary goal of the DIGITAL-EUROPE CSA initiative DeployAI (DIGITAL-2022-CLOUD-AI-B-03, 01/2024-12/2027) is to build, deploy, and launch a fully operational AloD platform, promoting trustworthy, ethical, and transparent European AI solutions for the industry, with a focus on SMEs and the public sector.

Building on Open-source and trusted software, DeployAI will provide a number of technological assets such as a comprehensive and Trustworthy AI resource catalogue and marketplace offering responsible AI resources and tools, workflow composition and execution systems for prototyping and user-friendly creation of novel services, responsible foundational models and services to foster dependable innovation, etc. In addition, and building upon the results of the ICT-49 AI4Copernicus project [1], which provided a bridge between the AloD platform and the Copernicus ecosystem and the DIAS platforms, DeployAI will integrate impactful Earth Observation AI services into the AloD platform. These will include (but not limited to) satellite imagery preprocessing, land usage classification, crop type identification, super-resolution, and weather forecasting.

Furthermore, DeployAI will allow the rapid prototyping of AI applications and their deployment to a variety of Cloud/Edge/HPC infrastructures. The project will focus on establishing a cohesive interaction framework that integrates with European Data Spaces and Gaia-X initiatives, HPC systems with an emphasis on the EuroHPC context, and the European Open Science Cloud. Interfaces to European initiatives and industrial AI-capable cloud platforms will be further implemented to enable interoperability. This capability enables the execution of Earth Observation applications not only within the context of a DIAS/DAS but also within several other compute systems. This level of interoperability enhances the adaptability and accessibility of AI applications, fostering a collaborative environment where geoscientific workflows can be seamlessly executed across diverse computational infrastructures and made available to a wide audience of innovators.

[1] A. Troumpoukis et al., "Bridging the European Earth-Observation and AI Communities for Data-Intensive Innovation", 2023 IEEE Ninth International Conference on Big Data Computing Service and Applications (BigDataService), Athens, Greece, 2023, pp. 9-16, doi:10.1109/BigDataService58306.2023.00008.

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