

Our Consortium

Our consortium brings together partners from eight countries namely Greece, Italy, Spain, Germany, France, Croatia, Cyprus and UK: Four research centres (CERTH, THL, CEA and CSIC), four universities (SSSA, TUDa, HMU, ESS), one highly prominent industrial company (ALS), five high-tech SMEs (BBL, PLX, UBT, PRO, TEL) and two end-users (ELVAN, JEPCO).



ARISE partners are all extremely prominent in their respective fields, contributing to the constant evolution of autonomous robots by leveraging the capabilities of robotic systems combined with the technological innovations of AI, hardware, and network technologies and forming modular systems to speed up their integration in industrial processes.



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ARISE FACTS

Starting date: 1st January 2024

Duration: 48 months

Coordinator: THL (Tech Hive Labs)

Consortium: 16 partners from 8 EU countries



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ARISE

Advanced AI and Robotics for autonomous task performance

Powering Up Agriculture & Green Energy with AI & Robotics

Problem Statement

Workforce Forecasting:

Solar Industry: 5m workers predicted gap, only in Germany

Agriculture: A staggering 28% reduction, by 2030

Our Solution

ARISE aims to develop an advanced robotic platform to...

- strengthen Agriculture and Energy, two industrial sectors integral to the progress of the European Green Deal.
- offer versatility in terms of autonomously or collaboratively performing long-horizon tasks, due to a toolchain of Robotic and AI/ML modules.
- contribute to the deployment of containerised AI-powered applications, by using an Edge-AI platform.



Technologies



A novel, pneumatic-based reconfigurable manipulator, with advanced soft end-effectors.



A Hierarchical Imitation Learning module.



An Ontological framework for Knowledge Representation.



A cognitive algorithm module encompassing Active Perception, Semantic Mapping and Localisation capabilities.



An edge-native, resource-optimised and automated computing infrastructure.

Impact

- ✔ Substantial “next step autonomy” in robots, undertaking non-repetitive tasks.
- ✔ Essential conditions for the diffusion of robots in various industries, sectors and services.
- ✔ Science advancements towards the automation of manual tasks.
- ✔ A step change in autonomy allowing long period task handling and realistic human-robot interaction
- ✔ Error reduction as well as speed and productivity increase for performance improvement.

Targeted Industrial Applications

ARISE toolchain will be tested on five Use Case Scenarios (UCS) within the Energy and Agriculture sector:

Solar panel installation and repair

- Navigation along the solar panel row, identifying backsheet cracks and deploying repairs.
- Navigation and Rack Bolt fastening.
- Picking up and carrying a solar panel in collaboration with a human worker.

Hydroponic lettuce transplanting and harvesting

- Lettuce transplanting.
- Lettuce harvesting.

