

Designing aware robots: event organised by EIC projects METATOOL and EMERGE explores awareness in robotic systems

The workshop was held during the 2024 edition of European Robotics Forum (ERF), the most influential meeting of the robotics community in Europe.

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*Cosimo Della Santina,
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has a longstanding interest in exploring awareness and consciousness. However, what it truly means for an AI system to be aware or conscious? Or how even can we define those terms for artificial entities?

Even though defining those terms is a fundamental difficulty in the field, most scholars agree that current AI systems fall short of possessing genuine awareness. This leads to the central question: What should users expect from a service or device claiming to have awareness?

In the scientific and philosophical discussions regarding awareness, the predominant focus has been on the human perspective, emphasizing individual experiences. These discussions explore the nature of human awareness, covering various facets like perception of the environment,

understanding of time, and self-awareness. “The study of awareness within robotics is similarly complex, and the convergence of these fields holds great promise for the development of more capable, intuitive, and trustworthy autonomous systems,” says Cosimo Della Santina, member of the EMERGE consortium and Assistant Professor from TUDelft.

Recently organised by the European Innovation Council projects METATOOL and EMERGE, the workshop “Designing Aware Robots” brought together international professionals, from academia and industry, to explore the multifaceted concept of awareness in the context of robotics, going beyond traditional discussions of navigation and adaptability, and delving deeper into the core questions and challenges surrounding awareness in robotics.

“Our workshop had the objective of stimulating innovative thinking to enhance awareness and consciousness in the field of artificial intelligence and robotics, creating more capable and trustworthy robots, chatbots, decision support and other autonomous systems,” emphasizes Burak Şişman, member of the METATOOL consortium and postdoctoral researcher from TUDelft.

The workshop was held in Rimini, Italy, on 13-15 March, 2024, during the 2024 edition of European Robotics Forum (ERF), the most influential meeting of the robotics community in Europe.

Selected contributions presented during the workshop will be published in the prestigious Springer Proceedings in Advanced Robotics (SPAR).

About the [EIC Pathfinder challenge Awareness Inside](#)

Eight projects have been funded by the European Innovation Council (EIC) to develop technologies based on awareness principles that will feed novel engineered complex systems, that are more resilient, self-developing and human-centric. This challenge places awareness as a prerequisite for real and contextualised problem-solving and action adaptation (and their consequences) to specific circumstances.

[The EMERGE project](#) will deliver a new philosophical, mathematical, and technological framework to demonstrate, both theoretically and experimentally, how collaborative awareness – a representation of shared existence, environment and goals – can arise from the perceptions and interactions of individual agents, without leveraging a pre-existing common language between them.

[The METATOOL project](#) investigates how robots can develop cognitive abilities for inventing tools as ancient humans did around three million years ago. Archaeology, neuroscience, and robotics join forces to shed light on the technological leaps that our ancestors achieved, and to develop novel technology inspired by human metacognition and awareness.

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Cosimo Della Santina, member of the EMERGE consortium and Assistant Professor from TUDelft, presents during the workshop “Designing Aware Robots” in Rimini, Italy.

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