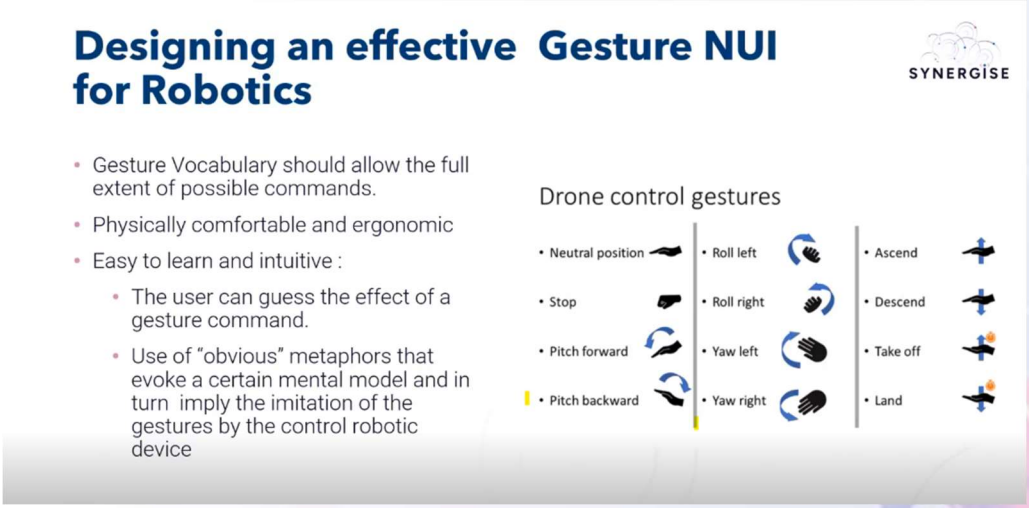
Augmented Reality & Data Fusion

CERTH

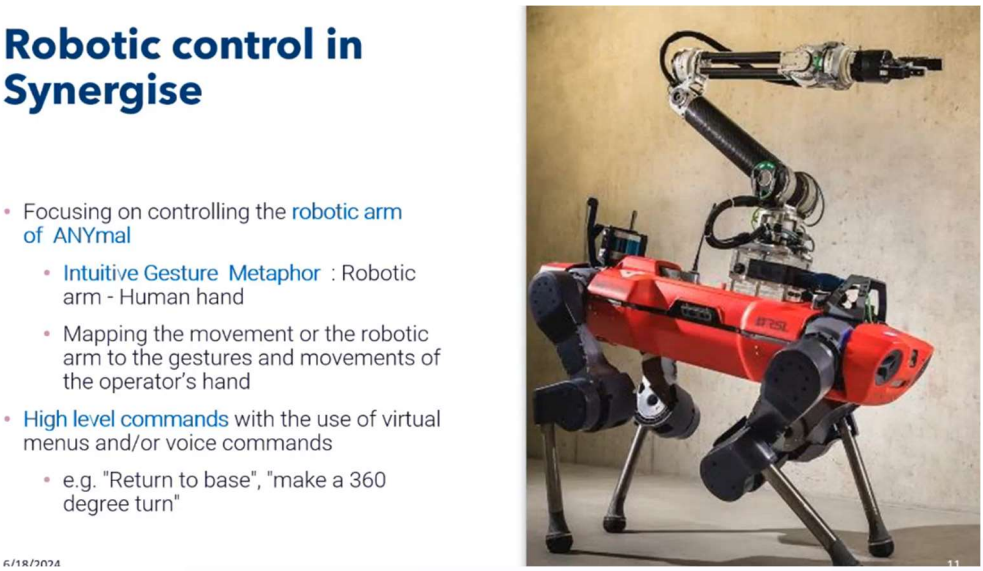
CERTH-ITI presented their work on Augmented Reality (AR) robot control and AI fusion and explainability layer during this CLT.

As a leading research institute in Greece specializing in computer science, telematics and telecommunications, ITI is focused on developing an intuitive, information-rich interface for operating robotic devices like ANYmal and SNAKE.



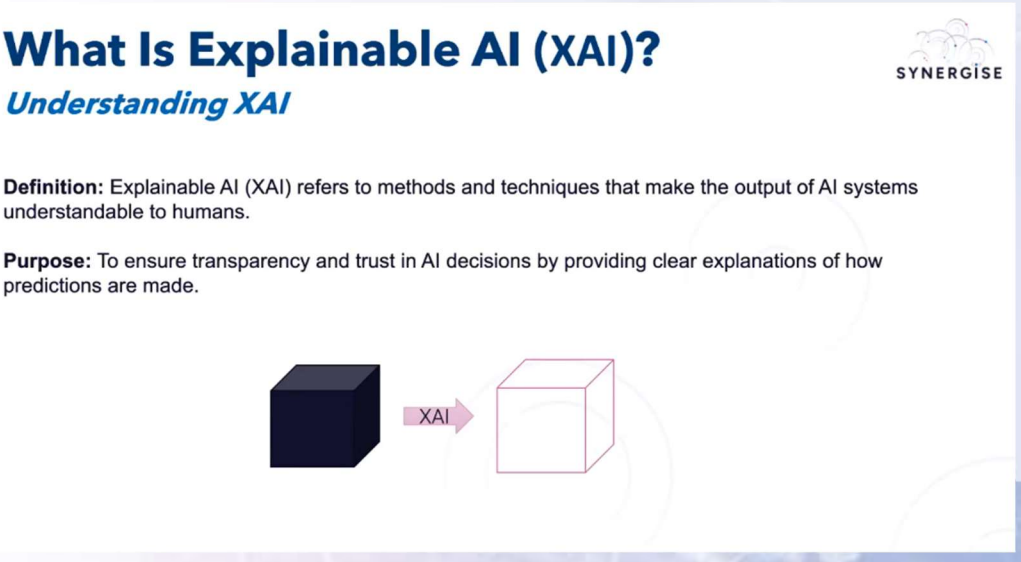
This AR-based control system leverages gestures, voice commands and visual cues to enhance user interaction. Additionally, ITI is working on an AI fusion and explainability layer aimed at increasing transparency and trust in the decisions made by machine learning algorithms used in the SYNERGISE project.

During the presentation, ITI showcased examples of their previous work in AR drone control, which they plan to adapt for robot arm control within the project. ITI explained the design and development process of the AR control interface, emphasizing the importance of usability testing and iterative refinement based on user feedback. They also introduced methods and tools for AI explainability, which they intend to tailor to various data sets and models focusing on the limitation of their complexity and the elevation of the decision support process.



The technical partners requested feedback and requirements from end-users and other collaborators to refine and test their solutions effectively.

Key discussion points from the meeting included ITI's role and tasks in SYNERGISE, specifically in the areas of AR robotic control and AI fusion and explainability. The session explored the benefits and challenges of using natural user interfaces and augmented reality for controlling robotic devices in search and rescue scenarios. ITI explained the design and development process of the AR control interface, emphasizing the importance of usability testing and iterative refinement based on user feedback.



Participants provided valuable input on the AR interface, including suggestions for seamless device switching, haptic feedback, and guidance features. The session also covered an overview of the AI fusion and explainability tool introducing the concept and the needs of using transparent and understandable explanations for AI predictions and decisions, presenting the methodology that will be used and some interactions with other SYNERGISE components. Additionally ITI demonstrated various explanation techniques, such as graphs, diagrams, and natural language messages, and outlined the user evaluation methods for primary analysis and Post- Testing Assessment they plan to use, including surveys, interviews, and decision-making metrics.