Support of Elderly People with Cognitive Impairment by Companion Robots

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Abstract : In recent years, it has been observed that the overall population is declining, and the number of elderly people is rising, especially in Europe. This shift means there are fewer younger people to take on essential jobs, especially in caregiving. While bringing in workers from other countries might provide a short-term solution, a more convenient one might be the use of Companion Robots (CoRos) to assist human caregivers. This paper explores how ready CoRos are for this task, with a focus on improving their capabilities through Explainable AI (XAI). Although AI has made great strides in providing powerful predictions, many of these systems are still difficult to understand and interpret. To overcome this, the suggested technique presents a model architecture for CoRos using YOLO CNN model with Lattice Computing (LC), which makes the computations more meaningful. Our initial experiments show that CoRos, with the help of XAI, can not only spot things like grapes in vineyard images but also explain why they made that decision, making their actions more transparent. This could have a big impact on building trust and accountability, making robotic caregivers more effective and reliable.