

Multi-Disciplinarity in Robotics Applications: Needs, Challenges, And Case Studies

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Abstract- Robots play a crucial role across various industries, from traditional industrial tasks to emerging service applications. This presentation advocates for a systematic approach from the early design stages to improve robot performance and explore new applications. It outlines a procedure focusing on quantitative design specifications, simulation models, and optimal design procedures. The aim is to develop intelligent solutions with cost-effective, user-friendly features. Illustrative examples demonstrate the feasibility and practicality of this approach, covering a wide range of applications. The presentation also emphasizes the increasing role of Computer Science, particularly in integrating Machine Learning (ML) and Signal Processing tools, as well as the use of generative tools to foster innovation and efficiency in robotic systems.

