

DATI, AI E ROBOTICA @POLITO

RICERCA, TRASFERIMENTO TECNOLOGICO E SUPPORTO ALLE AZIENDE SUI TEMI FONDAMENTALI DEI BIG DATA, INTELLIGENZA ARTIFICIALE, ROBOTICA E RIVOLUZIONE DIGITALE

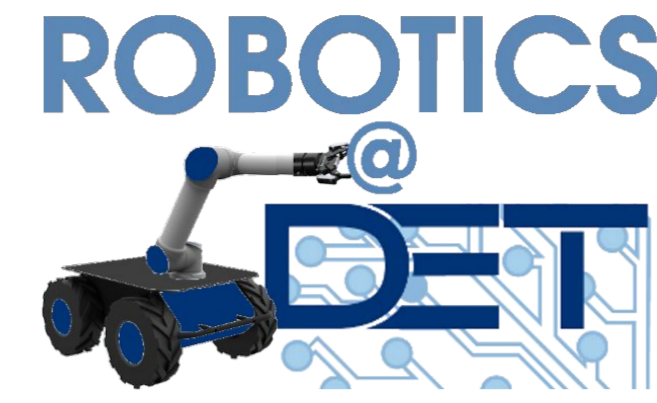


INDOOR ROBOTICS

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Politecnico di Torino



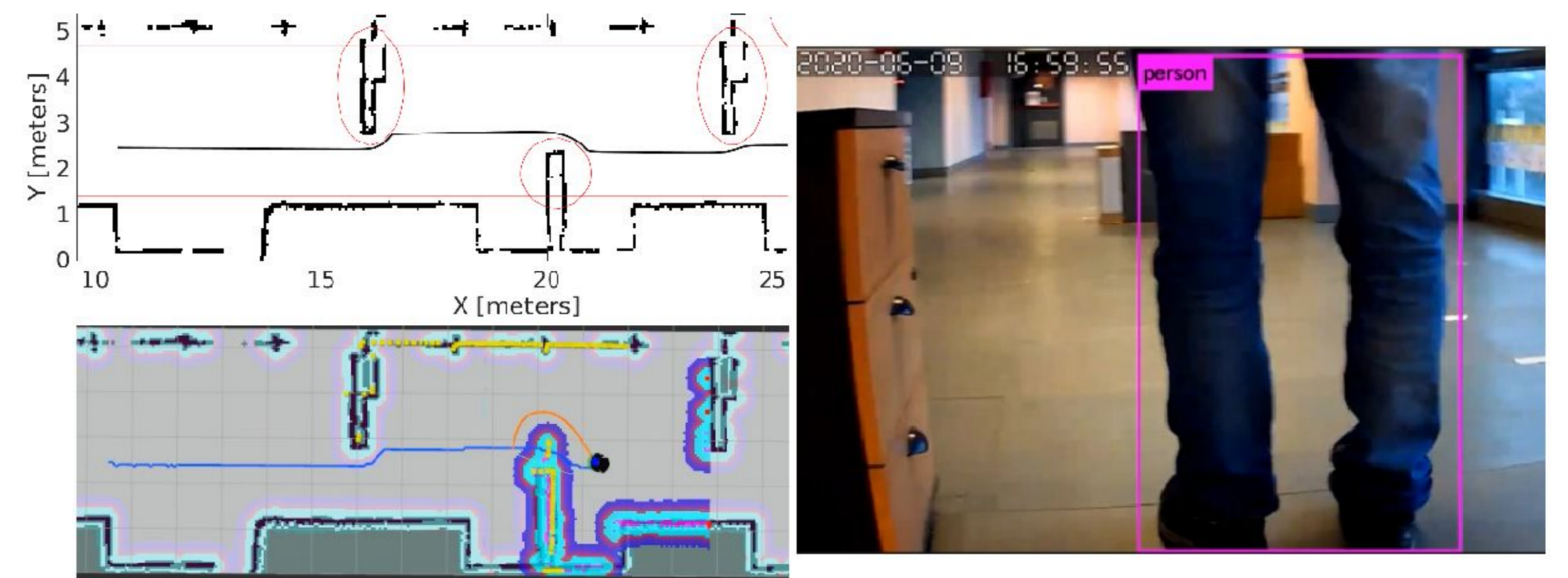
MOTIVATION AND BACKGROUND

- The authentic goal of indoor service robotics is to provide a reliable, safe and comfortable interaction with humans in multiple environments, ranging from offices and family houses to warehouses and manufacturing plants.
- In this poster, we present several indoor service robotics applications, which exploit conventional techniques as well as Machine Learning algorithms.
- All these ingredients can enable robots to enter in our daily life to assist people in their houses, at workplaces and in public buildings.



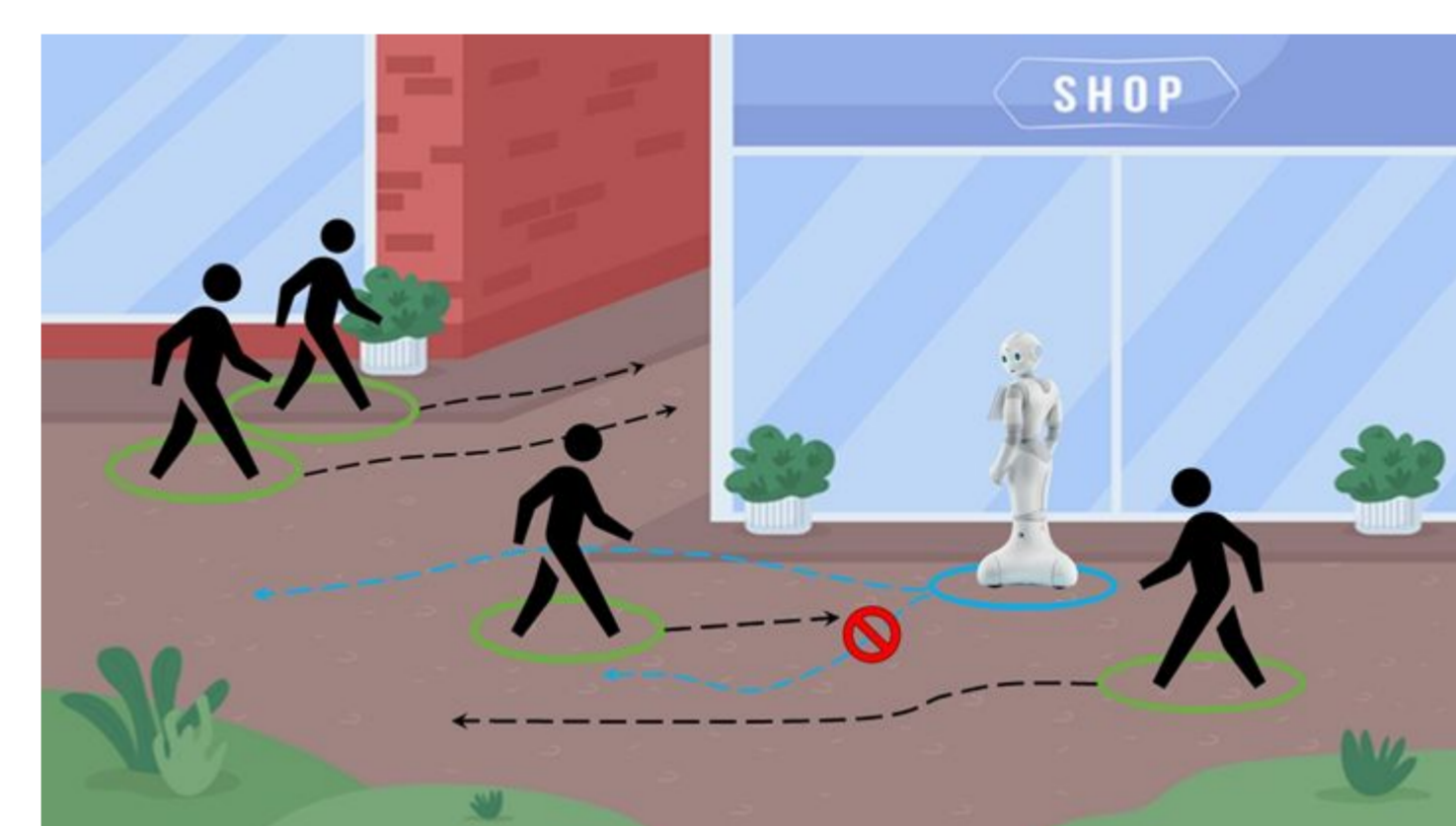
INDUSTRIAL AUTONOMOUS MOBILE ROBOTS

- Mobile robots improve **performance** and **flexibility** of today's **smart factories**
- At **Robotics@DET** we exploit human identification algorithms and path planning techniques to guarantee **safety** in human-robot shared workspaces



SOCIAL ROBOTICS

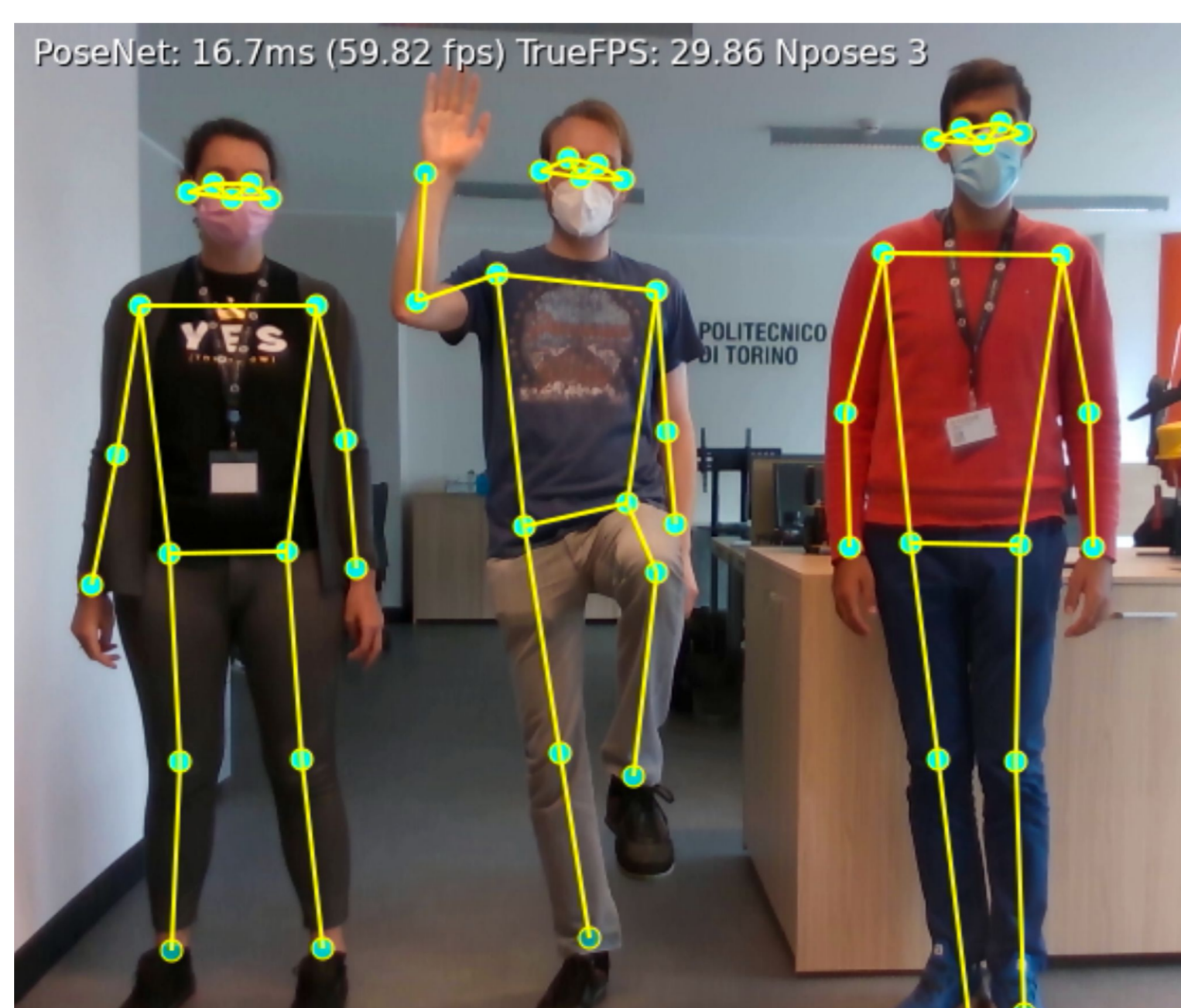
The Robotics group at Complex systems laboratory at Politecnico di Torino is engaged in research on the interaction between humans and robots. Our project is focused on socially acceptable ground navigation for autonomous robot to guarantee safety, predictability and to preserve comfortable interaction with humans.



SERVICE ROBOTICS

At PIC4SeR indoor research activity focuses on:

- **Indoor Robotic Assistant** in smart home
 - Person Identification and Following, Pose Estimation, Vocal Assistance
- **Autonomous Navigation**
 - Localization (VIO, UWB) and Mapping
 - Obstacle Avoidance and Planning with Visual and Range Sensors
- **Deep Reinforcement Learning** local planner
- **Platform Architecture** for Service Robotics



CONCLUSIONS AND FUTURE WORK

- Factories of the future are converging towards anthropocentric approaches, through the implementation of collaborative applications involving human operators in the control loop.
- Robots are more and more present in our lives. By performing useful tasks they improve the quality of people's everyday life. In the near future social and service robotics will become fundamental to ensure the physical and the psychological safety of humans.

