

Tutorial 4 intro: DexROV: Teleoperation of a simulated ROV and arm

Gianluca Antonelli, ISME – node of Cassino
Paolo Di Lillo
Daniele Di Vito

ISME in brief

Italian interuniversity center

- Nodes:
 - Ancona
 - Bologna
 - Cassino
 - Cosenza
 - Firenze
 - Genova
 - Lecce
 - Pisa
 - Roma Sapienza



ISME in brief

- Sea-Lab:
 - Joint Italian Navy/ISME located in La Spezia
 - No need of advance area clearance
 - Availability of Navy support personnel
 - Some restrictions



ISME in brief

- involved in a number of European projects and technology transfer since 1999:



ISME in brief



- Running H2020 projects:

- WiMUST formation control, cooperative navigation
- DEXROV manipulation, time-delay control

- ROBUST manipulation

- In 2018:

- EUMR, EUropean Marine Robotics. H2020 Infrastructure
- small project with Qatar + technology transfer

The DexROV picture (i'm not going to repeat dexROV again...)

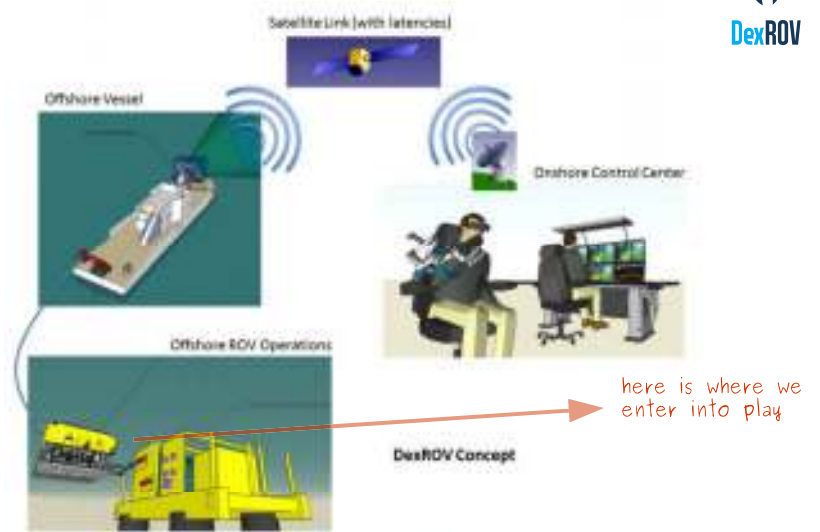


Figure 2. DexROV concept - High level

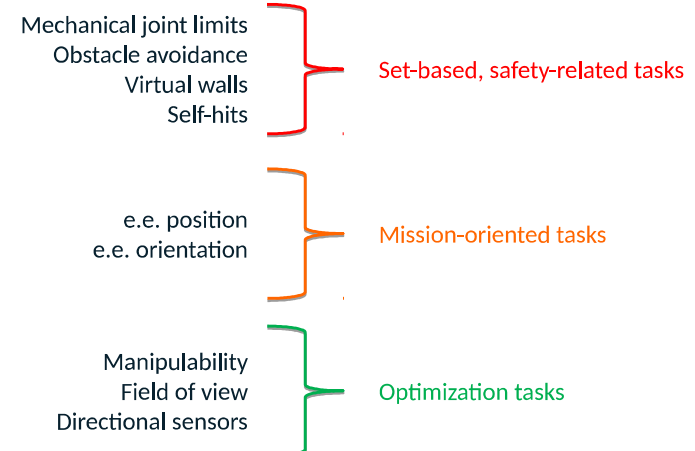
Simple inverse kinematics...



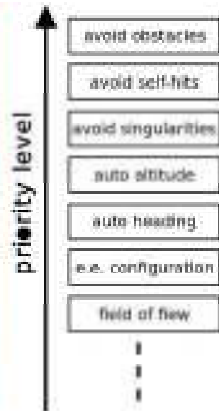
- Objective:** we receive end-effector desired movements and output reference joint velocities in real time guaranteeing
 - cartesian constraints
 - self-hitting
 - obstacles
 - dexterous workspace
 - mechanical joint limit
 - joint speed limits
 - kinematic singularities
 - any optimization?



Simple inverse kinematics...



Simple inverse kinematics...



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The mockup panel



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Some numerical simulations



Video: panel_sim01-panel_sim04

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Preliminary experimental results



Satellite-based tele-operation of an underwater vehicle-manipulator system. Preliminary experimental results

Paolo Di Lorenzo*, Daniele Di Mite*,
Enrico Sirelli***, Giuseppe Cuzzolin**, Gianluca Antonelli*

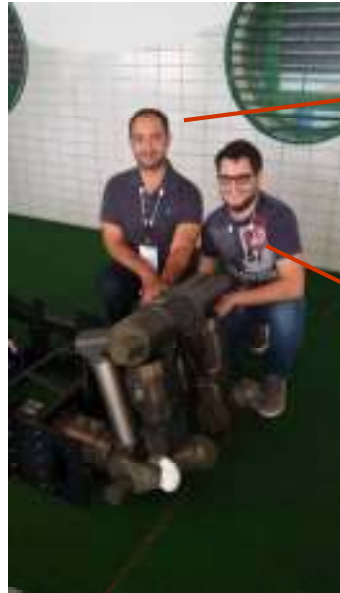
*Politecnico di Milano, Dipartimento di Ingegneria Meccanica e Industriale, Milano, Italy
**University of Genova, Genova, Italy
***University of Ferrara, Ferrara, Italy

ISME
Integrated Systems for Marine Environment

Video: ICRA_DexROV

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The "real" experts...



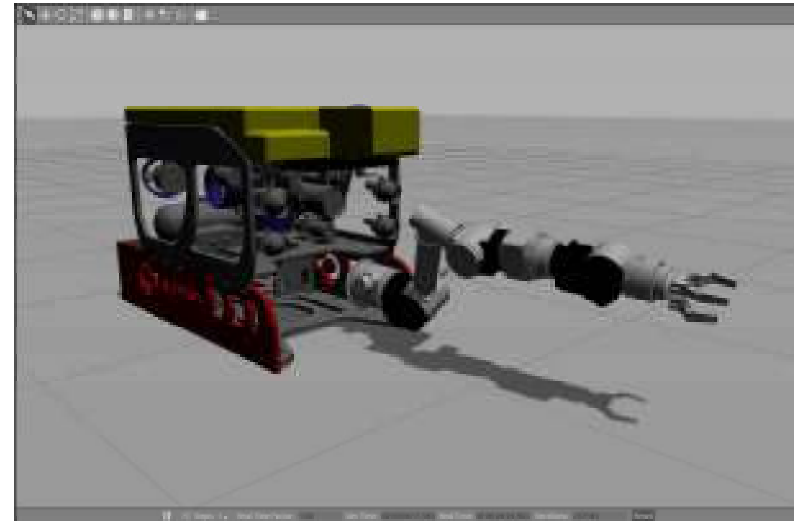
Paolo

Daniele

Detail on the implemented algorithm in the following tutorial/demo

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Questions?



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