Assembly and Control of a Humanoid Torso with Variable Stiffness Actuators

Problem description:
The development of robots able to operate in unstructured environments and to physically interact with unknown objects requires impedance management. A novel technological trend in robotics focuses on the development of actuators able to change their stiffness with dedicated mechanisms, the so-called variable stiffness actuators (VSA) [1], [2].

In this Forschungspraxis work the student has to assemble a humanoid torso consisting of 12 VSA and a head. The student is also asked to compute forward and inverse kinematics of the arm and to implement the zero deflection control [2] and position control of the two arms in Matlab/Simulink.

Work schedule:
- Assembly of the humanoid torso.
- Compute forward and inverse kinematics of the arms.
- Zero deflection control in Matlab/Simulink.
- Position control in Matlab/Simulink.

Bibliography:

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