**Control strategies for an underactuated space robot**

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The dominant trend in industrial robot control is the usage of linear control methods, which compensate the dynamics of the system. A major drawback of these controllers is that they do not utilize the possibilities provided by the natural dynamics of the system, therefore they lose efficiency. In the design of controllers for underactuated systems we aim to exploit the dynamics of the system, thus creating faster, more energy efficient and more robust controllers.

My paper is about the study of various control strategies of a space robot. The robot consists of a body and a robotic arm attached to it. The robot has three degrees of freedom, but has only two actuators, thus it can be considered underactuated.

In my paper applied two control strategies for the space robot. I have already studied the first control strategy beforehand, which is based on Laplace transform. In the implementation of the controller I also studied the relative degrees of the system, which can be used to describe the appearance of the control signal in the output of the system.

The second control approach is based on the Wen-Bayard control algorithm. However, this algorithm cannot be used for underactuated systems without modifications. Considering the conservation of angular momentum, I supplemented the controller so that it could be used for the control of the space robot.

Literature:

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