

Robwork Assignment 3

Group 1

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1 Introduction

In this assignment the robot Denso VS-6556 has been analyzed, DH parameters has been found from a datasheet of the Denso and an XML file has been constructed, making it possible to simulate a Denso robot in RobWorkStudio. The specification and a 3D model of the robot has been provided. The 3D model was split into piece dividing the base, joints and end-effector, making it possible to put in onto the simple RobWork skeleton created beforehand.

2 Problem description

The task was to simulate a Denso VS-6556 robot, and simulate it in Robwork. We had a data specification sheet of the Denso robot, .obj 3D model, and .mtl file which is a description of the material of the .obj model. The task was to find DH-parameters, and create a RobWork XML file, load it, and simulate in RobWork. The .obj model can't be loaded as it is but it needs to be split up into links with joints and saved as .ac format before RobWork can load the new models. Then to make use of collision detection between links new collision 3D models needs to be created.

3 Robot model

The robot Denso 6556 has six joints, and all these joint are revolute type.

1. The construct the DH parameters out of the data sheet of the Denso 6556, from six joints, according to these parameters a xml file were created and joint degree limitations were added.
2. The object file was splitted into objects of joints and saved as seperated objects by using AC3D software

3. In the XML file, frames were placed and the objects of joints were included.
4. The position of objects were changed according to RPY, because each shape were saved and loaded without regards of other shapes.
5. The XML was loaded into RobWork and simulated, small corrections of shapes placement were necessary.
6. Simple collision ascii .stl models were created and included into the XML file to simulate collision between joints.

4 Conclusion

The Denso VS-6556 was imported successfully into RobWorkStudio, using the specification and the model. The model was split up properly and the model was tested to see if the joints and collision were functioning correctly, which they did.

References

- [1] John J. Craig. *INTRODUCTION TO ROBOTICS Mechanics and Control Third Edition*. Pearsons Prentice Hall, 2005.