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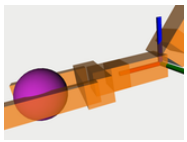

Mass Estimation for Manipulators using Sliding Mode Observer

version 1.0 (11 MB) by Marco Antonio Negrete Villanueva

Files for the project "Object Recognition by Physical Properties Detection using Fault Reconstruction Techniques"
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This project is developed in the context of the Robocup@Home competition. We propose to estimate the mass of a grasped object using fault reconstruction techniques. Considering the weight of the object as a disturbance causing a faulty behavior, such weight can be estimated using an Sliding Mode Observer. The estimation of the grasped object mass can be used to improve manipulation tasks when visual information is not enough to correctly identify an object (e.g., an empty and a full can). The overall system was designed and tested using Simulink Toolboxes and this repository contains the files and instructions to reproduce the results obtained using two different manipulators: Katana (https://github.com/uos/katana_driver) and Justina's left arm (a robot developed in the Biorobotics Laboratory, UNAM https://biorobotics.fi-p.unam.mx/). For technical details, please refer to http://arxiv.org/abs/2010.06116.

Cite As

Marco Antonio Negrete Villanueva (2022). Mass Estimation for Manipulators using Sliding Mode Observer (https://github.com/RobotJustina/RCF-MathWorks-2020-14/releases/tag/1.0), GitHub. Retrieved March 21, 2022.

Requires

MATLAB

Simulink

ROS Toolbox

Robotics System Toolbox

Simscape

Simscape Multibody

MATLAB Release Compatibility

Created with R2020a
Compatible with R2020a and later releases

Platform Compatibility

☑ Windows ☑ macOS ☑ Linux

Tags

fault reconstruction | manipulation | robotics | service robots | sliding mode obse...