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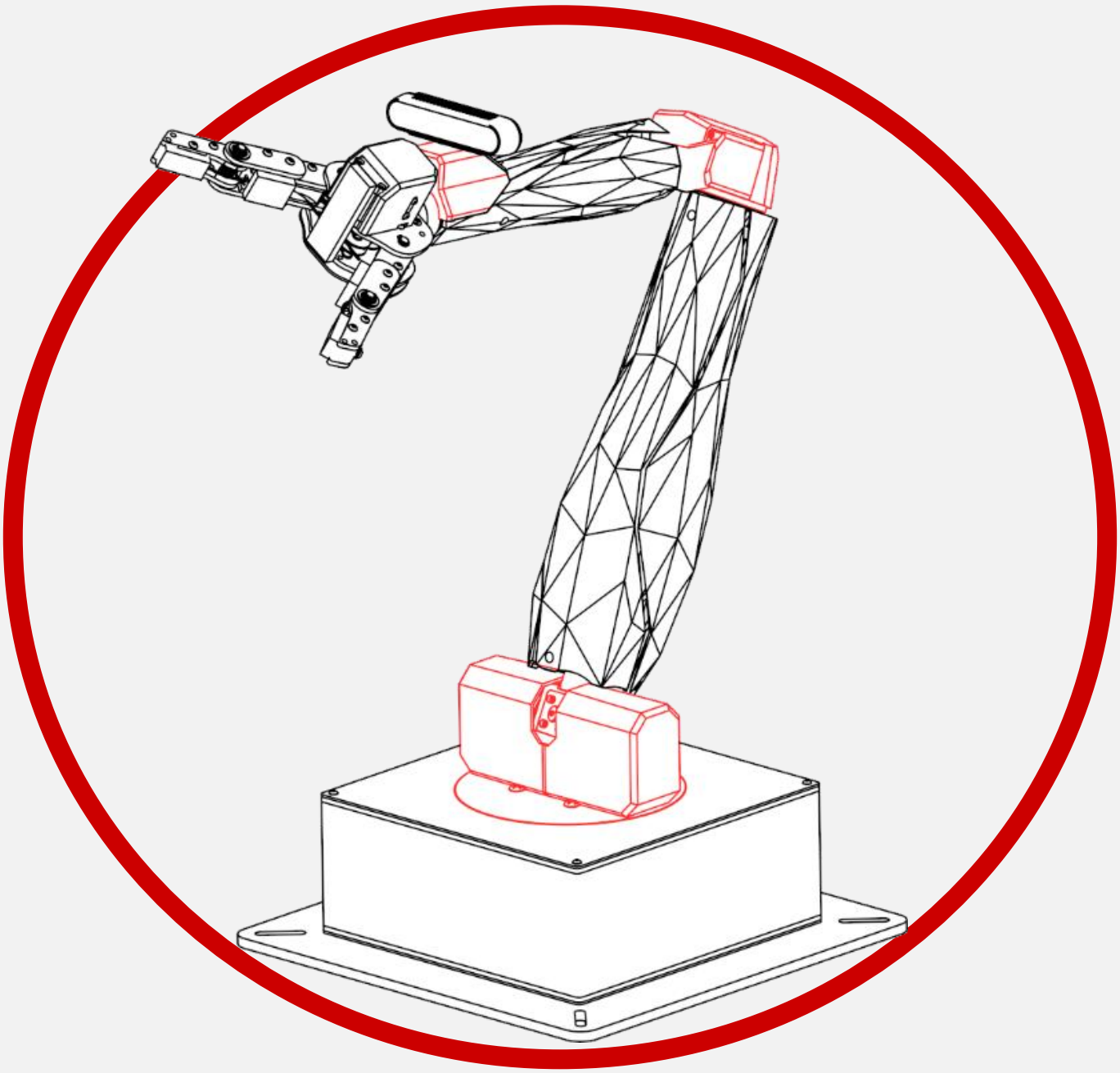

QArm

Object Detection

V1.0 – 13th February 2025

For more information on the solutions Quanser offers,
please visit the web site at: http://www.quanser.com

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Caution

This equipment is designed to be used for educational and research purposes and is not intended for use by the public. The user is responsible for ensuring that the equipment will be used by technically qualified personnel only. Users are responsible for certifying any modifications or additions they make to the default configuration.

QArm – Application Guide

Object Detection

Why explore Object Detection?

After understanding different color spaces and how images are processed digitally, the next step is to use these concepts for real life applications. This lab will focus on object detection, which allows us to identify and locate elements of interest from an image or a video. In this lab, you will learn the basics of different image filters as well as how to start detecting objects in the image. Future labs will focus on how to use this information to manipulate the QArm to find or follow selected objects in its workspace.

Background

The QArm content contains 3 labs that focus on visual servoing. The first one focuses on learning how to do image acquisition, the second one in object detection, and the last one focuses on visual servoing, which is moving the arm based on what the camera sees. This lab focuses on identifying our object of choice.

Prior to starting this lab, please review the following concept reviews (should be located in Documents/Quanser/4_concept_reviews/),

- Concept Review – Image Filters (Everything before the Sharpening Section).
- Concept Review – Blob Detection

Getting started

The goal of this lab is to use the QArm camera to find the blob of the object of interest. A Simulink model will be used to read the image, add filters and finally find the blob.

Ensure you have completed the following labs

- Image Acquisition Lab

Before you begin this lab, ensure that the following criteria are met.

- The QArm has been setup and tested. See the QArm Quick Start Guide for details on this step.
- You are familiar with the basics of Simulink. See the Simulink Onramp for more help with getting started with Simulink.