UNIVERSITY OF SOUTH FLORIDA

Defense of a Master's Thesis

Multi-object Localization in Robotic Hand
by
Tsing Tsow

For the MSCS degree in Computer Science

We have developed a machine learning approach to localized objects inside a robotic hand using only images from 2D cameras. Specifically, we used deep learning method (You Only Look Once, YOLO) and Iterative closest Point (ICP) to estimate the 3D coordinates of the objects in a robotic hand. This method will also output the number of objects inside the robotic hand in addition to the coordinates of the objects. We have demonstrated the performance with simulation and obtained typically accuracy within a few pixels (couple mm) and counting accuracy of about 76%. We have also applied it to real images, which is currently a work in progress to improve prediction performance. Furthermore, we are in the process of expanding the model to predict objects other than spheres. Our approach can find applications in many image-based object localization applications including industrial and service robotics.

October 19, 2021
8:00am
Online (Microsoft Teams)
Please email for more information
tft@usf.edu

THE PUBLIC IS INVITED

Examining Committee

Yu Sun, Ph.D., Major Professor
Dmitry Goldgof, Ph.D.
Shaun Canavan, Ph.D.

Robert Bishop, Ph.D.
Dean, College of Engineering

Dwayne Smith, Ph.D.
Dean, Office of Graduate Studies

Disability Accommodations:
If you require a reasonable accommodation to participate, please contact the
Office of Diversity & Equal Opportunity at 813-974-4373 at least five (5) working days prior to the event.