Developments in machine learning and computing capability in recent years have created opportunities that were previously not cost effective. One such area is image recognition and computer vision, where a machine analyzes an image and classifies it. After classification, the machine can pass the information off to a different algorithm for decision making. Before a machine can classify parts of an image as a human does, it must break down the image in a process called image segmentation. This task is an open research area. Many algorithms exist to determine how pixels are grouped. This research poster details a validation study of related papers on image segmentation algorithms for machine learning. The first author has selected three different image segmentation approaches. Algorithms for this study will be reproduced in Python and utilize many pre-existing libraries. Our team has acquired a small robotic research platform to provide evaluation of our research. A Robot Operating System based robot will be assembled and tested with the three different algorithms to assess their real-world effectiveness. This study may lead to more research platforms. Additionally, this undergraduate research study opens opportunities for students to work with sophisticated code first-hand. This research was funded in part by the Dr. Snowden Memorial Scholarship with the NASA Oklahoma Space Grant Consortium. This material is based upon work supported by NASA issued through the OSGC.

Items you need to define:

* Image Recognition: A subject in machine learning with the goal of teaching computers to view and classify an image as humans do.
* Machine Learning: A subject in computer science with the goal of teaching computers to learn, without it being explicitly programmed.
* Image Segmentation: The process in which a computer breaks down an image.
* Algorithm: A mathematical formula, to be performed in a particular set of steps.
* Python:
* Libraries: