



# Sensor Configuration and Calibration Setup Assistant

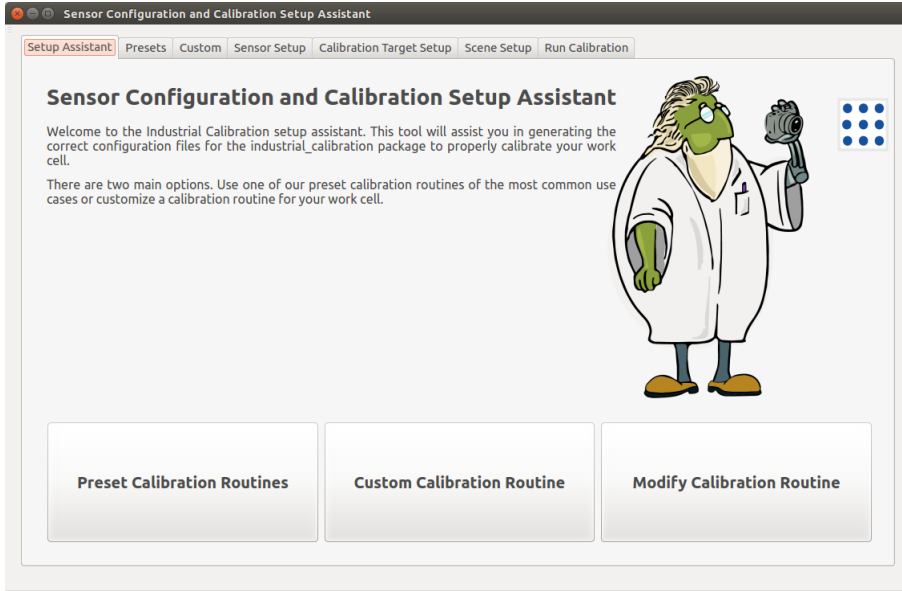
Paul Hvass

PlusOne Robotics





# Overview



## Approach

- Create a graphical library to allow drag and drop 2D and/or 3D imaging sensors and calibration targets into the 3D environment
- Add preset calibration cases of the most common scenarios
- Allow a person whose name isn't Dr. Chris Lewis to calibrate their work cell without getting a headache.

### Metrics for success:

- Library populated with existing sensor configuration packages and target models.
- Demonstrate the intrinsic calibration of an individual sensor.
- Demonstrate the extrinsic calibration of a single sensor and target
- Demonstrate the extrinsic calibration of a multiple sensors with a robot holding the target.

## Motivation/Objective

- **Motivation:** The current industrial calibration package is extremely difficult to use. Setting up a calibration routine involves manually editing multiple YAML files and understanding which cost functions to pick for each type of calibration.
- **Objectives:** Create a graphical user interface for the *industrial calibration* package with preset configurations for the most common calibration cases to simplify the calibration process.

## Schedule

	M1	M2	M3	M4
Clean Codebase	█			
Add Kinematic Calibration Features		█		
Setup Assistant GUI		█	█	
Testing				█





# Common Use Cases



The screenshot shows a software window titled 'ic\_setup\_assistant'. At the top, there are tabs for 'Presets', 'Custom', 'Sensor Setup', 'Calibration Target Setup', 'Scene Setup', and 'Run Calibration'. The 'Presets' tab is active. The main content area is titled 'Run Preset Calibration Routine' and features the ROS Industrial logo. It is organized into three sections: 'Kinematic Calibration' with one button 'Camera on Robot Target in Workspace'; 'Intrinsic Calibration' with two buttons 'Camera on Robot Target in Workspace' and 'Camera and Rail'; and 'Extrinsic Calibration' with four buttons: 'Single Camera Single Target', 'Multiple Cameras Multiple Targets', 'Single Camera on Robot Target(s) in Workspace', and 'Target on Robot Camera(s) in Workspace'. To the right of these sections is an 'Instructions' section containing a paragraph of Lorem Ipsum text.





# Calibration Setup Assistant



Features	Current	Proposed
2-D Camera Calibration	✓	✓
3-D Camera Calibration	✓	✓
Movelt Motion	✓	✓
Simulated Calibration	✓	✓
Software Triggering of Sensors	✓	✓
Kinematic Calibration		✓
Updated Tutorials		✓
Simple GUI		✓
Detailed Documentation		✓





# Contact Info.



## Paul Hvass

Co-founder and COO

### PlusOne Robotics

601 Delaware St.

San Antonio, TX 78210

### Email:

[paul.hvass@rosindustrial.org](mailto:paul.hvass@rosindustrial.org)

### Web:

- [https://github.com/ros-industrial/industrial\\_calibration](https://github.com/ros-industrial/industrial_calibration)
- [plusonerobotics.com](http://plusonerobotics.com)

