Gesture Assisted Mechatronic Enabled Runtime

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Customer Background

GyroPalm, LLC, seeks to combine the ease of gesture control with the innovation of wearable technology. By implementing custom gestures in tandem with AR technology using Gyropalm's patented platform, users can monitor and manipulate the robot to perform tasks in an industrial setting. The team aims to demonstrate the versatility of using gesture controls with AR in the industry.

Problem Statement / Scope of Work

To complete this project, a problem related to sorting or handling will be addressed using a robotic arm powered on Robot Operating System (ROS) and the GyroPalm. A specific issue that has a significant impact on fulfillment, logistics, or other Pharmaceutical adjacent industries paired with a high return on investment will be selected. The advancement will integrate the technology of the GyroPalm with a 5 or 6-axis robotic arm. In addition, this robot arm will be a pivotal part of a larger assembly line. The end customer will be pharmacists, researchers, or production line workers who will integrate the robot arm assembly into their workflow for high efficiency. The user of the technology will be able to perform actions hands-free.
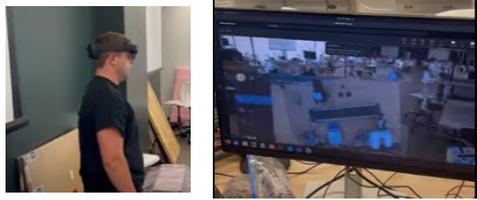
Requirements

Experimentation and Concepts
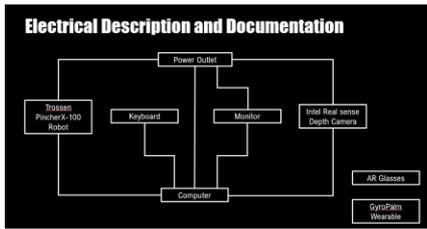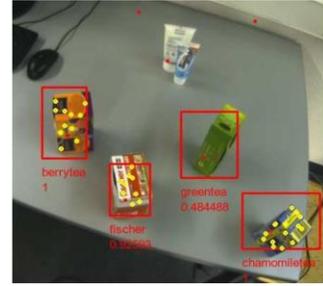
Final Design

The camera view is transmitted to the glasses via a Teams call. The computer can see the view of the user wearing the glasses and the feed from the camera at the same time. This allows for the user to control the robot from further distances.

Failure Mode Effect Analysis

Test	Expected Result	Actual Result	Pass/Fail
Video Access on Glasses	Seamless video access to the workspace through Teams call	Video access is achieved through Teams call, allowing remote viewing of the workspace with some additional support required	Partial Pass
Custom Program for Camera Software	Custom program developed for camera software	A third-party program is used for camera software that provides similar functionality and is easier to integrate with the main system	Pass
Interaction with Robot through Glasses	Ability to interact with the robot within the glasses in some capacity	While interaction with the robot through the glasses was not feasible, a third-party program is used to enable interaction with the robot from a remote location	Partial Pass
User Interface Notifications	Indicators, warnings, and other similar interface notifications available	User interface notifications were not implemented due to time constraints, but could be added in future iterations of the project	Partial Pass

Testing