Collins Aerospace

Digital Test Stand

Abstract

• This project seeks to accomplish the goal of building a number of systems to give the Collins Aerospace engineers different options for interacting with a test bench. The project was split into two parts.
  • The first task was to create a software system to control, manage, and maintain communication between the test bench and another computer.
  • The second task was to create a software system that can interpret spoken commands so that the system can be controlled simply by voice.

Results

• Task 1 was able to effectively control and moderate com ports for the given interface. The software successfully gained control of com ports and was able to reset them without requiring an active reboot.
  • Task 2 was able to effectively interpret and pass on voice commands. The grammar is able to accurately classify the spoken command and translate it to a value within an array.

Architecture

![Architecture Diagram]

Languages used
• Powershell
  o PnPDevice
• C#
  o System.speech

Impact

Collins Aerospace is trying to integrate a digital test bench with modern day technology to replace their traditional analog counterpart. Our job was to improve the reliability and usability of the system.

Before
• Collins Aerospace engineers had to manually restart unresponsive com ports.

After
• Our software allows easy 1-step restart of any unresponsive com ports.
• Voice recognition allows hands free use of the testing system.

Performance

• Weekly task completion rate: 76%
• Company feedback: TBD
• Functional tasks were completed
  • Functions do not have bugs or interruptions

Summary

• Virtual USB COMM Port Control - software that will take control of all of the device’s COMM ports upon startup. The software must then monitor and maintain all communications through the virtual COMM ports and, should any port becomes unresponsive, reset that individual port without needing to reinstall USB drivers or reboot the device.
  • Voice Activated GUI - software that will allow the user to operate the test stand by speaking commands into a microphone to toggle buttons or select items from the menus of the system’s graphical interface.