Wandering Ambassador Test Stand

MSD: P12215
Customer: Future Wandering Ambassador Teams

Project Statement / Background:
Over the past four years, RIT students have designed, assembled, and
tested the Wandering Ambassador. They have succeeded in their goal of
c furnishings the creativity and aptitude of RIT students. Since the first year,
the complexity of the project has grown immensely. The task of
comprehending and understanding past modifications to enhance the
project further has become a laborious task. Our goal is to reduce the
period in which a new group can familiarize themselves with the Wandering
Ambassador and enable quicker problem solving and multidisciplinary
development to be performed in parallel.

Customer Specifications:

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<th>Critical Specs</th>
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<td>Specification</td>
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<td>Late Night Dance</td>
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<td>Arm Paint</td>
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<td>Arm Stretch</td>
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Development:
Our team began familiarizing ourselves with the project by bench
marking the robot's capabilities and shortfalls. We gained a foothold of
the issues that have plagued teams in the past. Our forward thinking
team immediately began formulating solutions then delved into
the problems logically and systematically.

Major internal performance upgrades:
Partitioning most of the low level computing to the newly installed
Cypress PSoC 5, we are allowing the ARM Cortex A9 dual core 1GHz pandaboard to be free for high-level processing such as serving web requests and autonomous navigation. A more sophisticated programmable architecture and a simplified communication interfaces enables easier development. Together the quick disconnect Test Stand and on-board diagnostics enables quicker and simpler future upgrades and integration.

Room for growth:
The newly redesigned PCB will enable future groups to expand with
two separate prototype areas! The advanced connection layout will let
all the existing connections cleanly flow to where they need to go
without all the previous clutter.

Disconnect system:
Sensors can be dismounted from the Wandering Ambassador chassis and
affixed to the mule test stand. Taking certain systems offline allows for
parallel development of the robot's capabilities. The change from one
platform to the other can be done in under five minutes!

Intelligent web interface and display:
Connection is everything in this world of technology so we gave the
Wandering Ambassador web based diagnostics and control that can
be accessed anywhere for constant monitoring from external
sources! There Is also a Blackberry Playbook mounted on the
Wandering Ambassador enabling direct interactions!

Autonomous capabilities
The new Test Stand and electronics maintains the Wandering Ambassador’s
sonars, Infrared sensors, an accelerometer for bump detection, and a GPS
which will enable it to remotely maneuver itself to a destination! This will all
be integrated in the future and be viewable through Google maps, as an
e xample.

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