Gesture Controls for Raven Robot

Group 7 Mini Checkpoint Presentation
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Overview

● Goal
● Deliverables
● Progress: 3Gear to CISST
● Progress: Networking Setup
● Progress: CISST to ROS
● Progress: ROS to Raven/Simulators
● Milestones
● Timeline
● Dependencies
Project Overview

Implement Gesture Controls for Raven Robot

Image courtesy of 3Gear

image from popular mechanics
System Block Diagram

Windows

Kinect

3Gear

SAW Wrapper (CISST)

Linux

Raven

Robot Simulator

The Internet Communications Engine (ICE)

CISST

ROS

Goals || Deliverables || Progress || Milestones || Timeline || Dependencies
Status of Deliverables

Minimum:
- SAW wrapper for 3Gear: **Done**
- cisstToRos interface: **Delayed: Expected May 3**
- Simple frames moving in Rviz: **Done**

Expected:
- Code to integrate all stages (3Gear to CISST to ROS to simulator): **On Track (April 26) Delayed: Expected May 6**
- Demonstration that 3Gear moves Raven Simulator: **On Track (April 26) Delayed: Expected May 6**

Maximum:
- Move Raven Robot using gesture controls: **On track (May 3) No longer expected**
Progress: 3Gear

SAW Wrapper is complete!
- Sends position data and pinch data as events (cartesian positions and button presses)
- Two versions: output to logger, connect to Ice

To be done:
- Documentation
Progress: Networking

ICE 3.5.0 installed and communicating between both machines
- Works better on Windows, difficult to install on Linux
- Might improve in the future/different environments

To be done
- Setup documentation or scripts
Progress: cisstRos

Delayed

- Switched plan to using ROS topics (1: many) instead of services (1:1)
- Our version will be a lightweight bridge, not as robust
Progress: ROS - Sim

Completed ROS script that broadcasts position data and events to an RViz model
- Rviz (provided by University of Washington) takes position data and events
- Outputs to Raven Model
- Raven Robot Controller

To be done:
- Documentation
# Milestones

| Complete | 3Gear to CISST - Kristine |
| May 3    |

| April 1  | May 3 | CISST talks to ROS - Alan Both |

| Complete | ROS talks to Simulator - Both Alan |
| April 26 | May 3 | 3Gear to Simulator - Both |
| April 29 | ROS talks to Raven - Both (max) |
| May 3    | 3Gear to Raven - Both (max) |
## Timeline (Initial)

<table>
<thead>
<tr>
<th>Deliverable</th>
<th>Week 3</th>
<th>Week 4</th>
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<td>Install 3Gear (Kristine)</td>
<td>Install CISST (Both)</td>
<td>Code! (Kristine)</td>
<td>Milestone Validation (Both)</td>
<td>Access Linux Machine (Alan)</td>
<td>Install CISST on Machine (Both)</td>
<td>Install ROS (Both)</td>
<td>Code! (Alan)</td>
<td>Milestone Validation (Both)</td>
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### Dependencies
Timeline (Current)

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Dependencies

Access to 3Gear Computer
- **Resolution Plan:** Get J-Card access, ask Kell for access
- **Resolve by:** February 15
- **Resolved:** YES

Learn to build CISST
- **Resolution Plan:** Meet with Anton to help us
- **Resolve by:** February 22
- **Resolved:** YES

Access to Linux Machine for ROS and Raven Simulator
- **Resolution Plan:** Kell finds us a Linux machine to work with
- **Resolve by:** February 22
- **Resolved:** YES - Work on laptops

Networking between 3Gear (Windows) machine and ROS/Raven (Linux) Machine
- **Resolution Plan:** Ask mentors for help
- **Resolve by:** March 25
- **Resolved:** YES

CAD models and/or actual Raven Simulator
- **Resolution Plan:** These should be available through the Raven community
- **Resolve by:** March 15
- **Resolved:** YES
Dependencies

Access to Raven Robot + Control Computer
- **Resolution Plan:** Ask Kell for access
- **Resolve by:** April 15
- **Resolved:** YES

Build cisstRos
- **Resolution Plan:** Ask mentors for help
- **Resolve by:** April 3
- **Resolved:** Yes (will write ourselves)

Install ICE on computers to be used
- **Resolution Plan:** Ask Kel (he has admin for the computer)
- **Resolve by:** April 10
- **Resolved:** YES

Learn how Raven is controlled
- **Resolution Plan:** Troubleshoot with Kel
- **Resolve by:** April 3
- **Resolved:** No
- **Fallback Plan:** None, affects expected and maximum deliverables

No further dependencies!
Thank you!

Questions?