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

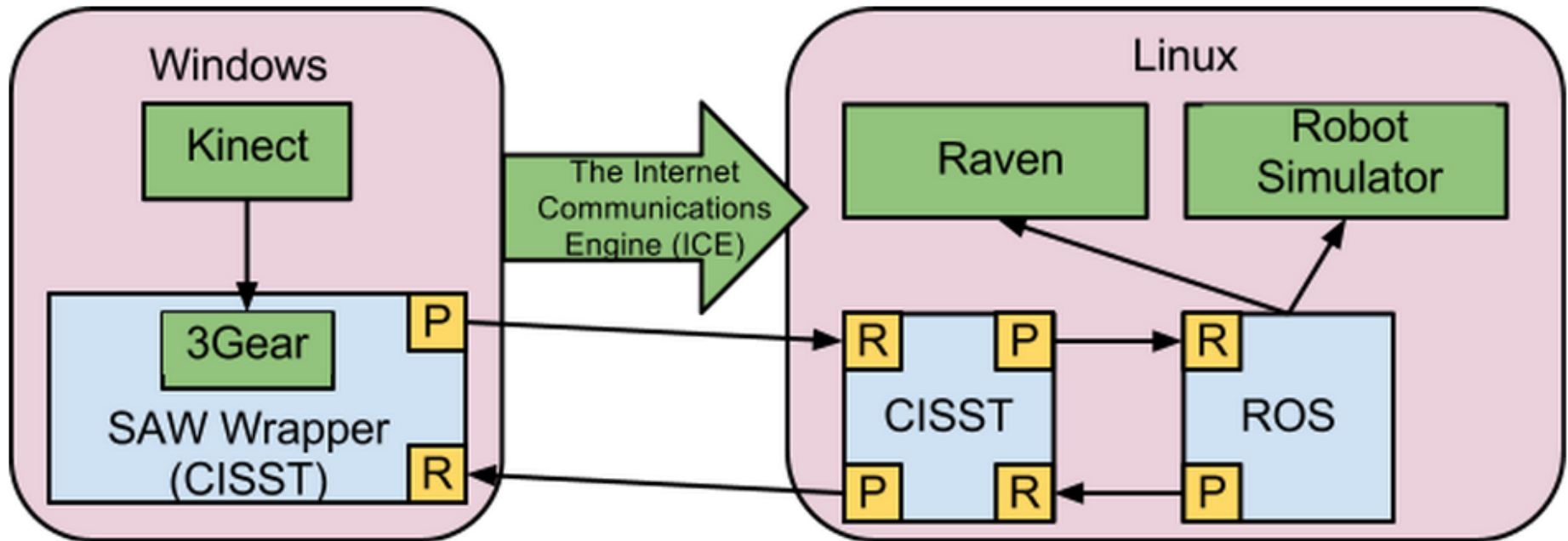## Implement Gesture Controls for Raven Robot

Image courtesy of
3Gear

image from popular mechanics

System Block Diagram

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
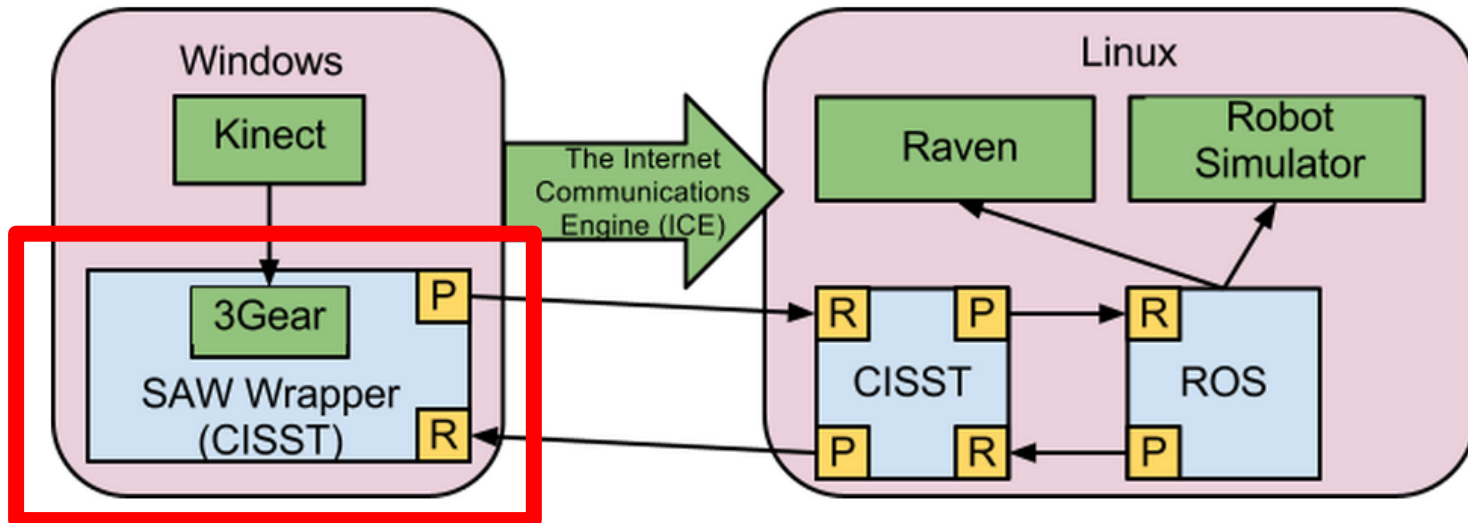
Progress: Networking

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
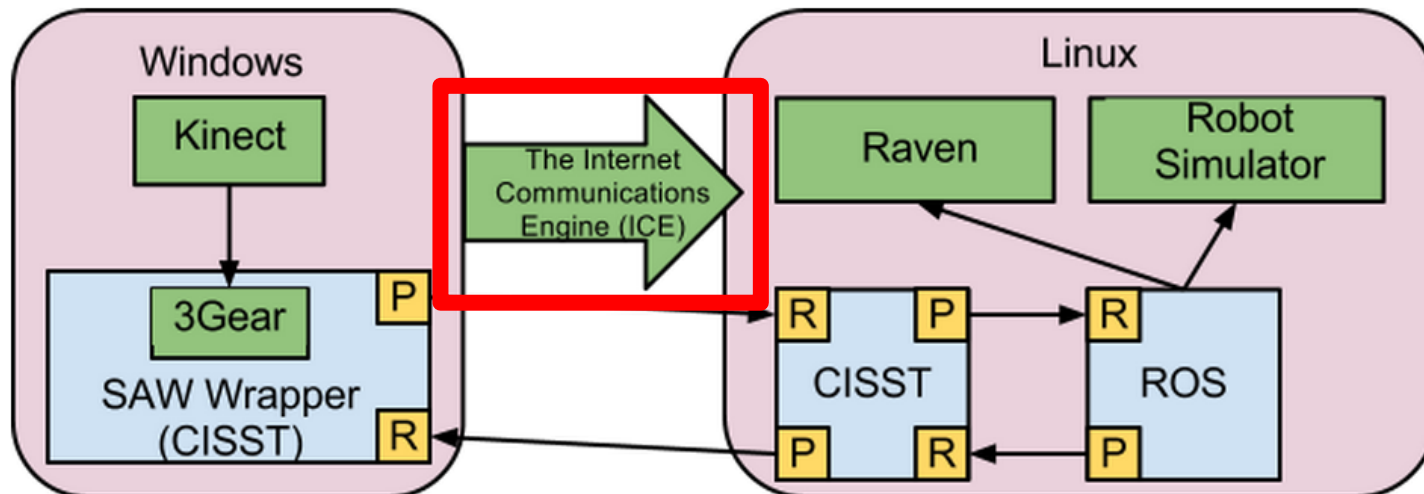
Progress: cisstRos

Delayed

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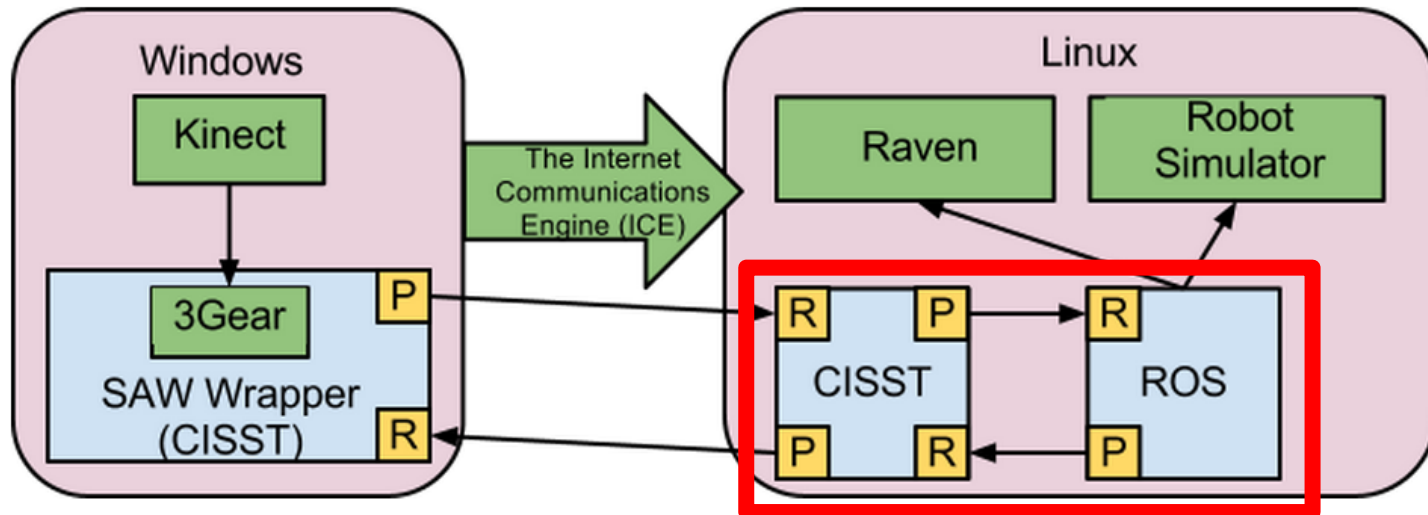
Progress: ROS - Sim

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
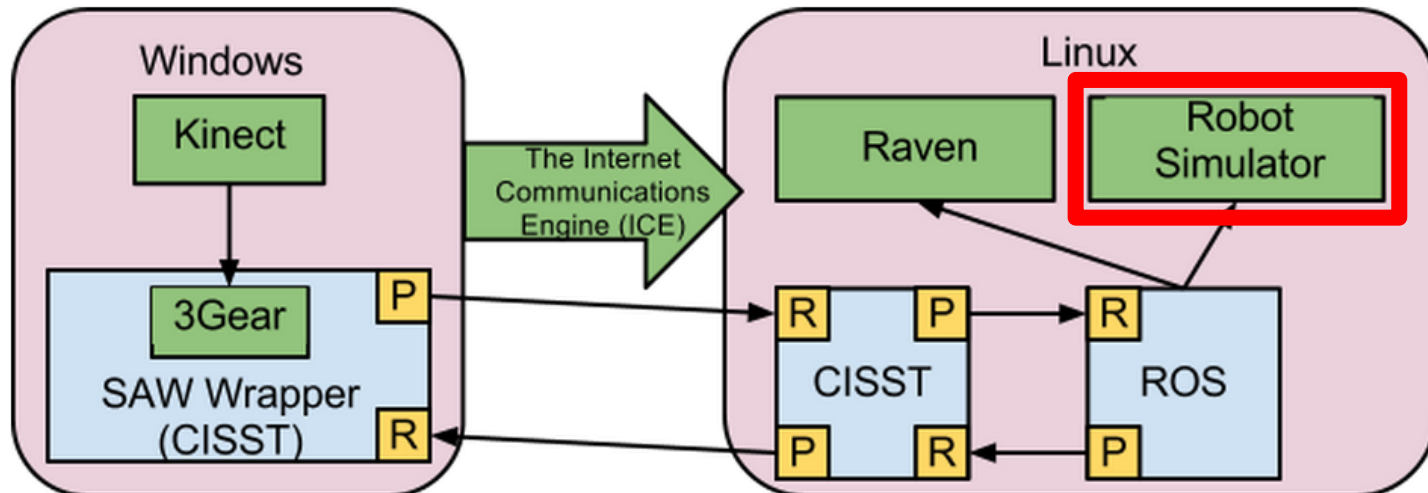
Milestones

Complete - 3Gear to CISST - Kristine

~~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)

| | Deliverable | February | | | March | | | | April | | | | May | |
		Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15
3Gear to CISST	Install 3Gear (Kristine)													
	Install CISST (Both)													
	Code! (Kristine)													
	Milestone Validation (Both)													
CISST to ROS	Access Linux Machine (Alan)													
	Install CISST on Machine (Both)													
	Install ROS (Both)													
	Code! (Alan)													
	Milestone Validation (Both)													
ROS to Raven Simulator	Acquire/Install Raven Simulator (Both)													
	Code! (Both)													
	Milestone Validation (Both)													
ROS to Raven Robot (Maximum Deliverable)	Access to Raven Robot + Controlling Computer													
	Code for Robot?													
	Milestone Validation													
System Integration	Software Design + Validation													
	3Gear to ROS - Networking/Setup													
	3Gear to ROS - Validation/Debugging													
	3Gear to Raven Simulator - Validation/Debugging													
	3Gear to Raven Robot - Validation/Debugging													

Timeline (Current)

	Deliverable	February				March					April			May	
		Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15
3Gear to CISST	Install 3Gear (Kristine)													
	Install CISST (Both)													
	Code! (Kristine)													
	Milestone Validation (Both)													
CISST to ROS	Access Linux Machine (Alan)													
	Install CISST on Machine (Both)													
	Install ROS (Both)													
	Code! (Alan)													
	Milestone Validation (Both)													
ROS to Raven Simulator	Acquire/Install Raven Simulator (Both)													
	Code! (Both)													
	Milestone Validation (Both)													
System Integration	Software Design + Validation													
	3Gear to ROS - Networking/Setup													
	3Gear to ROS - Validation/Debugging													
	3Gear to Raven Simulator - Validation/Debugging													
	Complete Documentation, Packaging													

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?