Robotic Operation of ICU Equipment in Contagious Environments

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Goals:

- Design an end effector mounted on an cartesian robot and operating UI that controls the robot to interact accurately with knob and buttons on an medical equipments in ICU (modeled by an oscilloscope here)

Significance:

- Aims to reduce the time, protection gear, and exposure risk cost that an ICU team member faces when entering an ICU room during a COVID-19 pandemic via tele-operated robotic system.

Results:

- Successfully implement object recognition to identify device type and initial relative position to robot.
- In the process of refining UI for robotic system control.
- In the process of testing end-effector efficacy for interacting with different knobs and buttons.

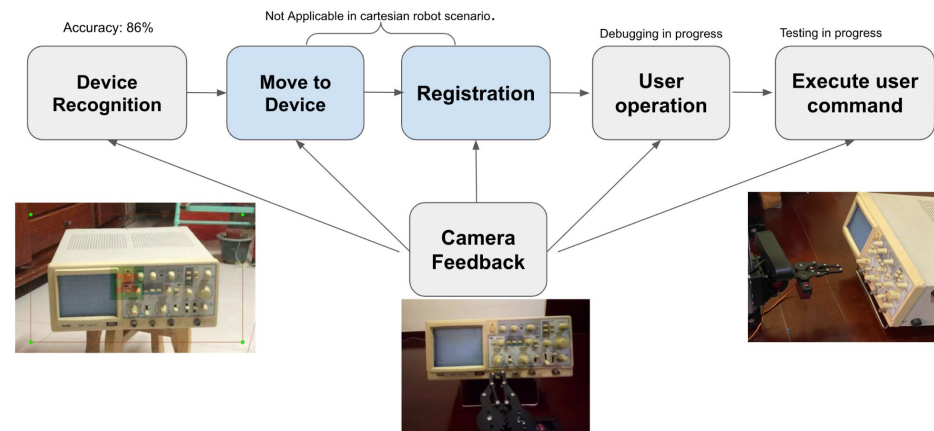*Fig 1. Overall structure of end-effector interacting with oscilloscope*

Fig 2. Proposed Workflow with object recognition, camera feedback and zoomed in end-effector - device interaction shown from left to right.