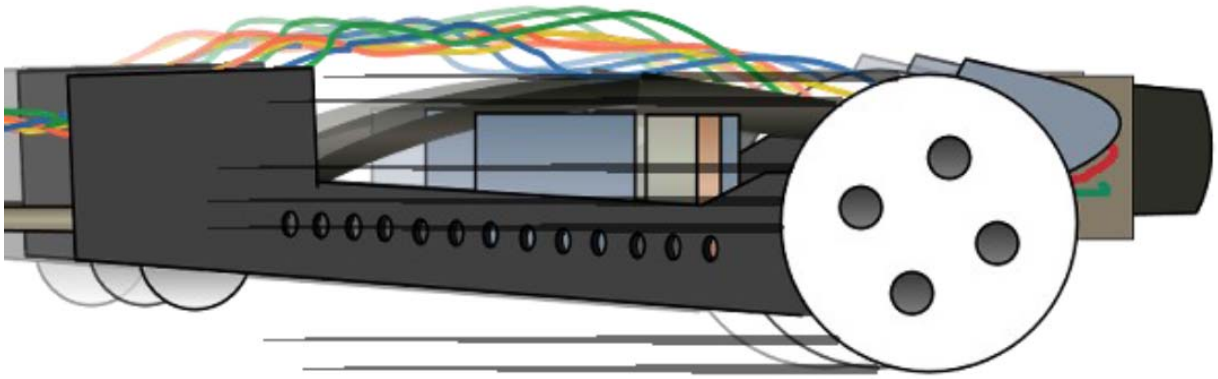


Raspberry Pi Powered Structural Inspection Robot

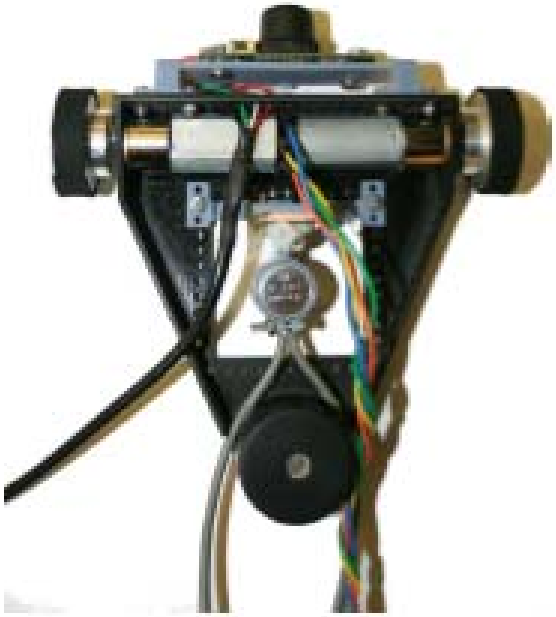
www.jonathanjamieson.com

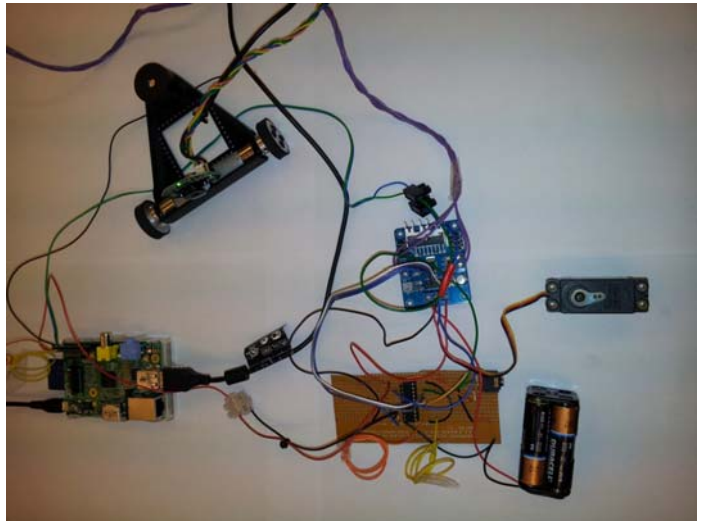
syngenta

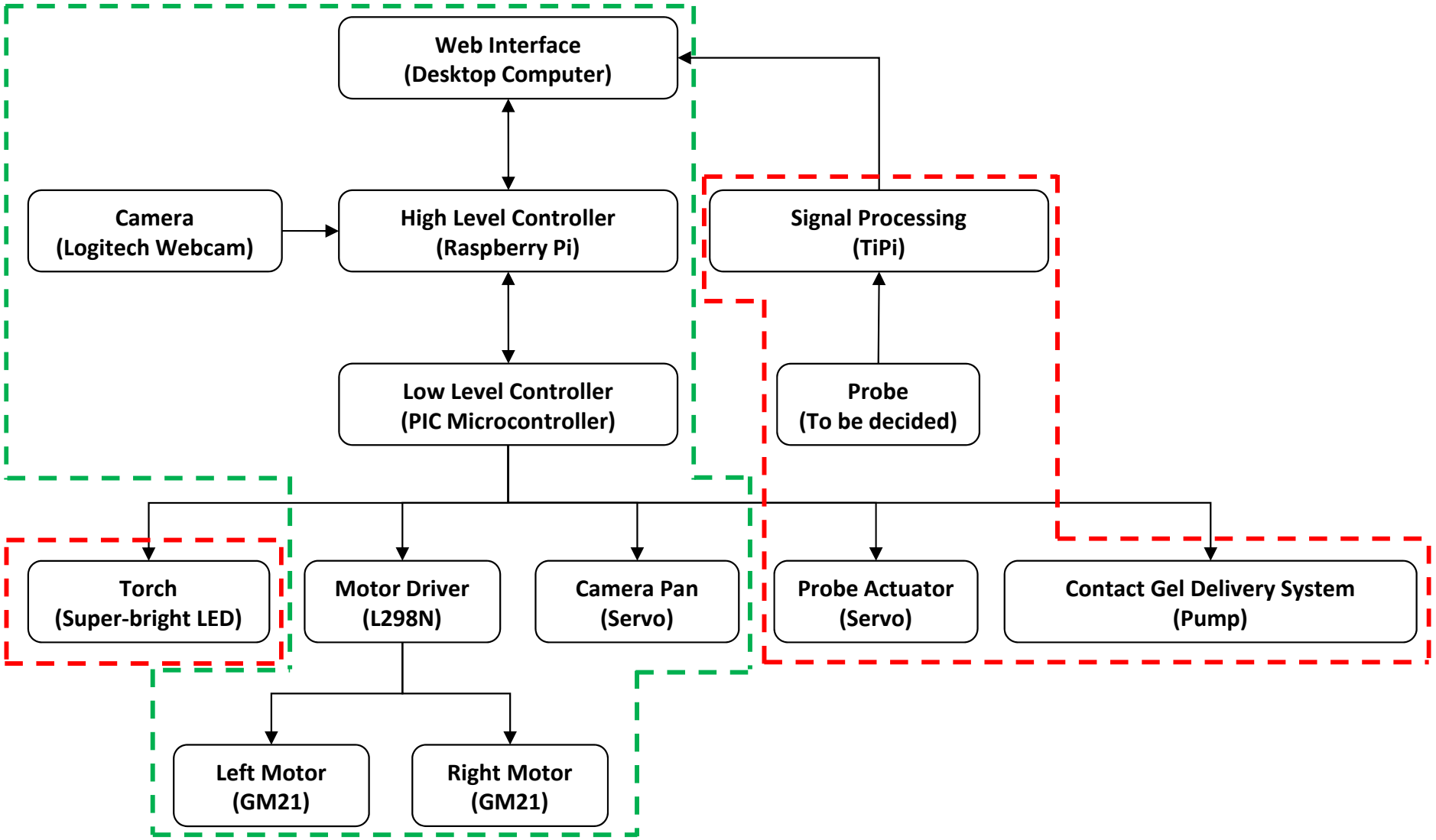
University of Strathclyde Engineering


COURSE 2


DELL
DELL

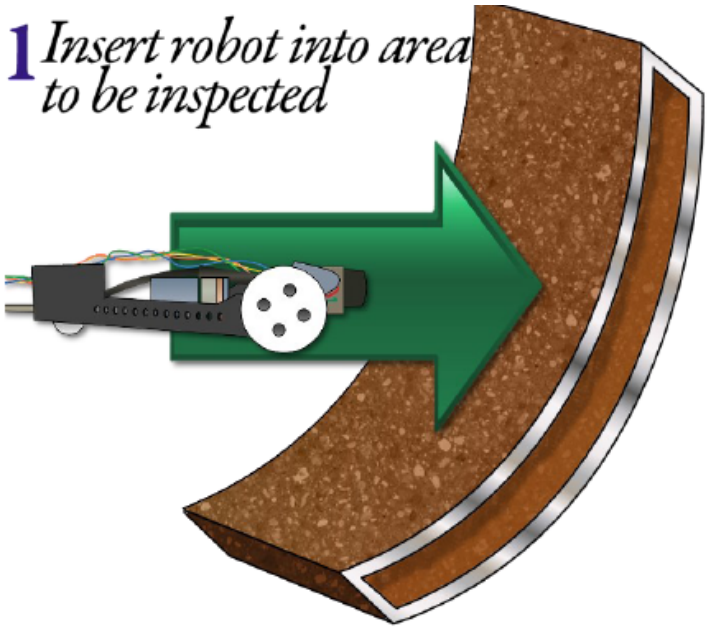





Web Interface
(Desktop Computer)
Camera
(Logitech Webcam)
High Level Controller
(Raspberry Pi)
Signal Processing
(TiPi)
Low Level Controller
(PIC Microcontroller)
Probe
(To be decided)
Torch
(Super-bright LED)
Motor Driver
(L298N)
Camera Pan
(Servo)
Probe Actuator
(Servo)
Contact Gel Delivery System
(Pump)
Left Motor
(GM21)
Right Motor
(GM21)

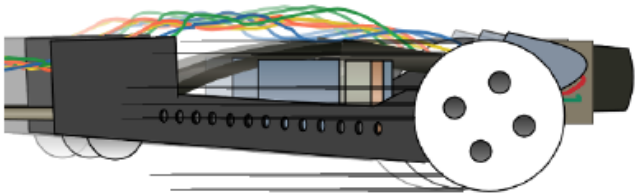
The Inspection Process

1 *Insert robot into area to be inspected*



2 *Log onto the web interface*

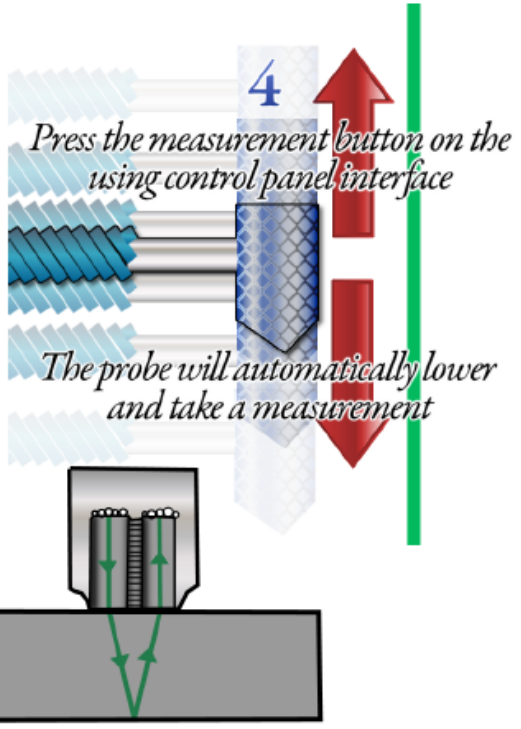
3 *Manoeuvre Robot to required location*



4

Press the measurement button on the using control panel interface

The probe will automatically lower and take a measurement



5 *The probe takes a measurement and sends it back to Matlab*

6 *Matlab processes the data, saves a copy to storage and displays the result on the web interface*

7 *Manoeuvre Robot to exit, and remove*

Key software used

On the Pi

WebIOPi (Robot interface)

Vsftpd (FTP server)

Apache (Hosting HTML)

MJPGStreamer (Webcam streaming)

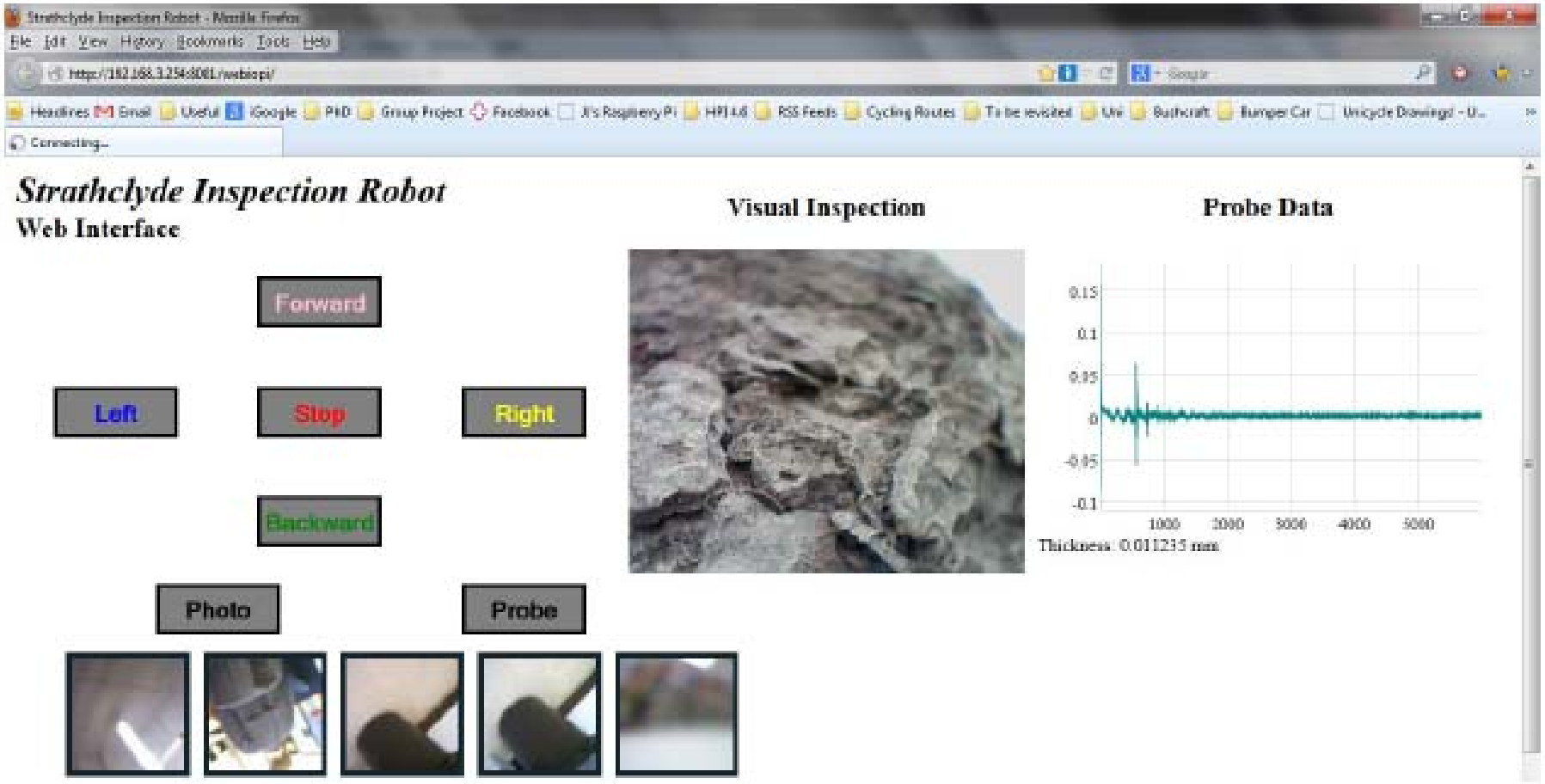
Off the Pi

Win32DiskImager (SD card backup)

FileZilla (FTP)

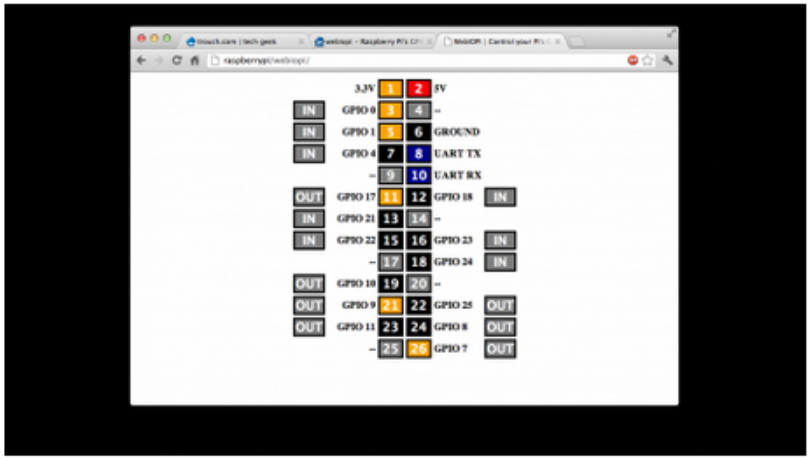
Putty (SSH)

The Robot Interface



WebIOPi

Raspberry Pi Internet of Things framework



3 Images, 0 Videos

Key Features

- REST API over HTTP and CoAP
- Server written in Python with no dependency
- Supports GPIO, UART, SPI, I2C, 1-Wire
- Supports more than 30 devices including ADC, DAC, sensors...
- Full Python library for the Server, GPIO, Serial, I2C, SPI and devices drivers
- Compatible with both Python 2 and 3
- Extensible and highly customizable

Follow WebIOPi.

WebIOPi is the perfect app to control your Pi from the web.
Login: webiopi
Password: raspberry

Tags: gpio raspberry educational

4.0 stars (26 votes)

Free!

Free Download

Free Demo

Tip this Project (£)

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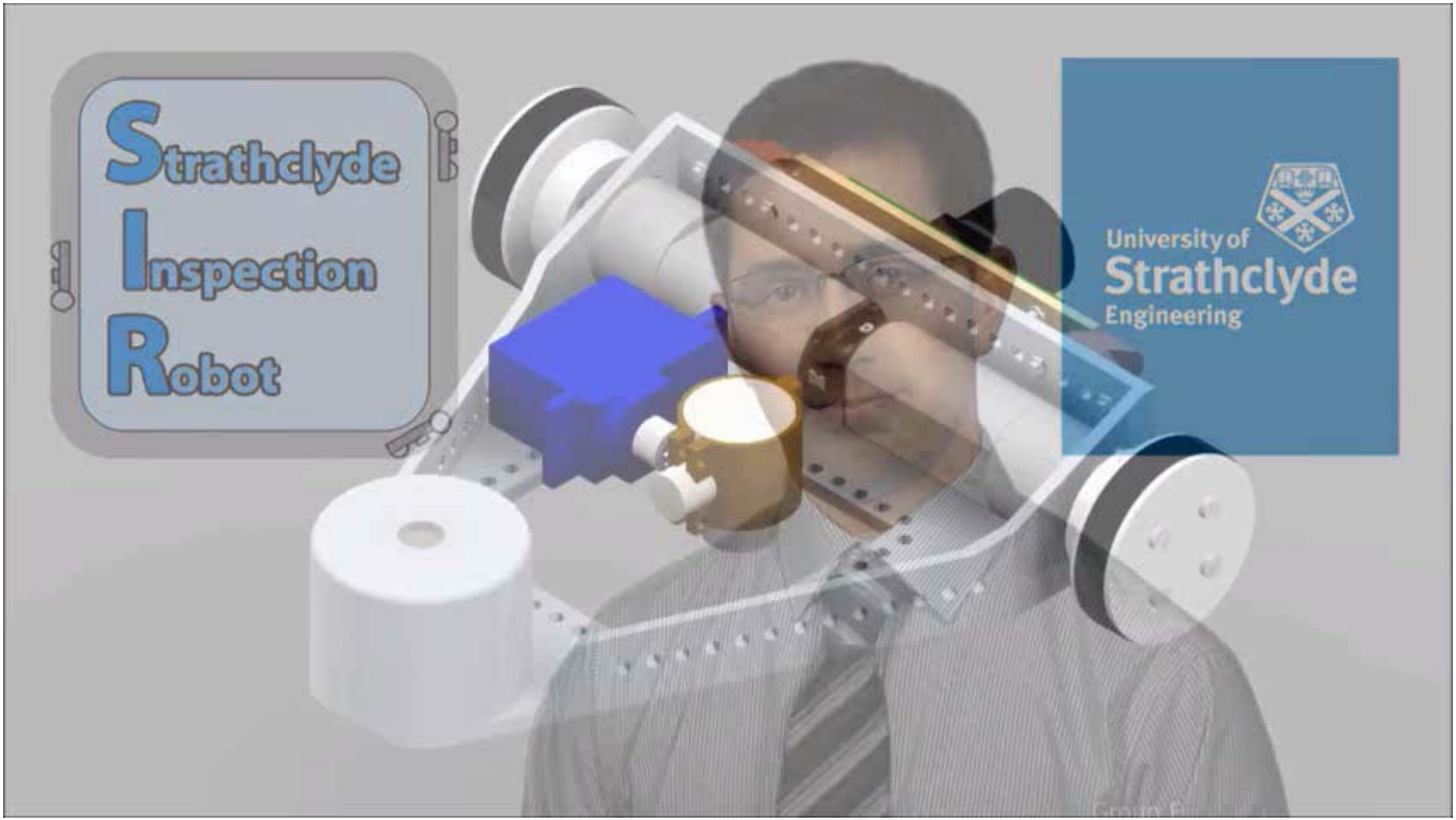
Promote This App

Promote this project on your blog or website with our HTML embed code. Show the code

What would I do differently?

- WiFi Access Point
- Camera – not at USB webcam because limited tether length
- Remove the PIC, a low level controller was unnecessary
- Chassis design
- Drop the ultrasound probe bit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Robot
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Engineering

Thanks for listening!