

Tangible Touch Team

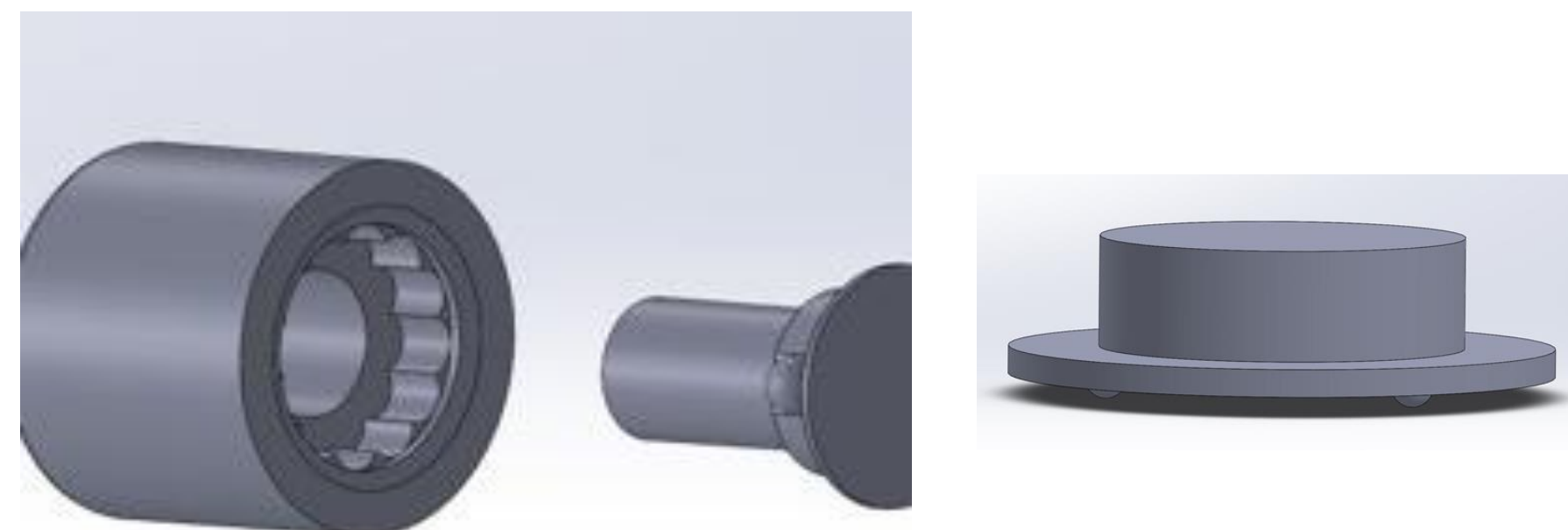
Andrew Brown, Preyusha Aryal, Reilly Wolfe

Objective:

To develop software (GUI) and build objects that interface via a touch screen with tangible object (knob, switch, joystick, puck)

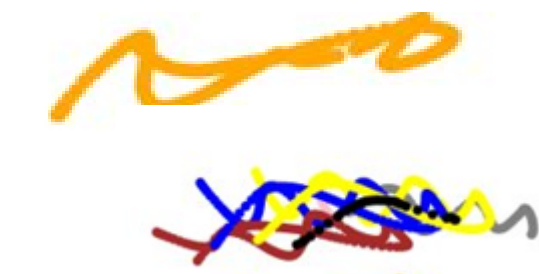


Mechanical Concept Development



Validation-

1. Single Touch testing
2. Multiple touch testing
3. HMI and Packet View Data



```
000207: Report Arrived (UP), 2020-10-08 16:18:24.1492161 +0.0069800
Report Name:Touch Screen
Report ID:-1
Unknown[0x0..0xf]: 0x0
Tip Switch: 1
In Range: 1
Unknown: 1
X[0..2047]: 1365
Y[0..2047]: 1285
```

```
000209: Report Arrived (UP), 2020-10-08 16:18:24.1572555 +0.0080259
Report Name:Touch Screen
Report ID:-1
```

```
000211: Report Arrived (UP), 2020-10-08 16:18:24.1702580 +0.0129807
Report Name:Touch Screen
Report ID:-1
Unknown[0x0..0xf]: 0x0
Tip Switch: 1
In Range: 1
Unknown: 1
X[0..2047]: 1365
Y[0..2047]: 1282
```

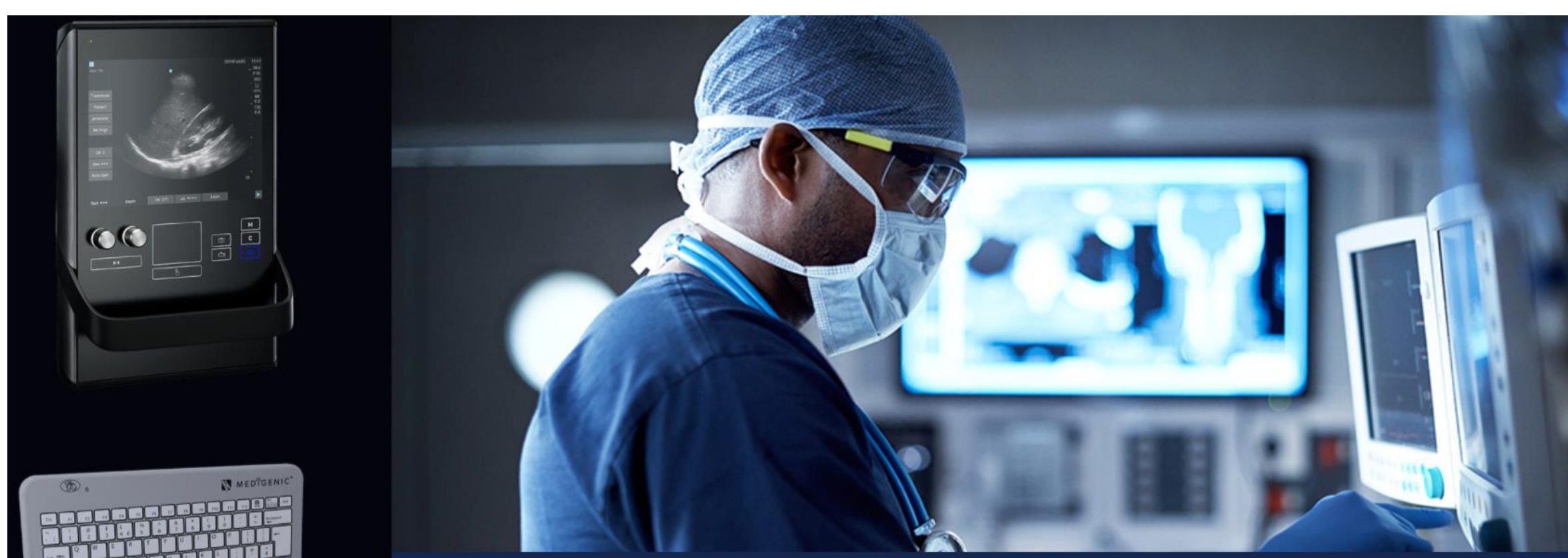
00000231	2020-10-08 16:22:05.9314131	+0.0090033	UP	0x00000000	URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER
00000233	2020-10-08 16:22:05.9364071	+0.0049828	UP	0x00000000	URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER
00000235	2020-10-08 16:22:05.9424250	+0.0060070	UP	0x00000000	URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER
00000237	2020-10-08 16:22:05.9524387	+0.0100014	UP	0x00000000	URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER
00000239	2020-10-08 16:22:05.9574163	+0.0049662	UP	0x00000000	URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER
00000241	2020-10-08 16:22:05.9634379	+0.0060093	UP	0x00000000	URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER
00000243	2020-10-08 16:22:05.9734422	+0.0099879	UP	0x00000000	URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER
00000245	2020-10-08 16:22:05.9794528	+0.0059939	UP	0x00000000	URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER
00000247	2020-10-08 16:22:05.9844402	+0.0049719	UP	0x00000000	URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER
00000249	2020-10-08 16:22:05.9944373	+0.0099859	UP	0x00000000	URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER
00000251	2020-10-08 16:22:05.9994408	+0.0049916	UP	0x00000000	URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER
00000253	2020-10-08 16:22:06.0234499	+0.0239981	UP	0x00000000	URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER
00000255	2020-10-08 16:22:06.0324141	+0.0089439	UP	0x00000000	URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER
00000257	2020-10-08 16:22:06.0424632	+0.0100372	UP	0x00000000	URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER
00000259	2020-10-08 16:22:06.0514653	+0.0089852	UP	0x00000000	URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER
00000261	2020-10-08 16:22:06.0604281	+0.0089462	UP	0x00000000	URB_FUNCTION_BULK_OR_INTERRUPT_TRANSFER

```
000253: Bulk or Interrupt Transfer (UP), 2020-10-08 16:22:06.0234499 +0.0239981. (1. Device: PM1401) Status: 0x00000000
Pipe Handle: 0xccba63b8 (Endpoint Address: 0x81)
Get 0x5 bytes from the device
```

Background and Value Proposition:

Allowing flexible application - Tangible feedback to user.

- E.g.: Ultrasound device



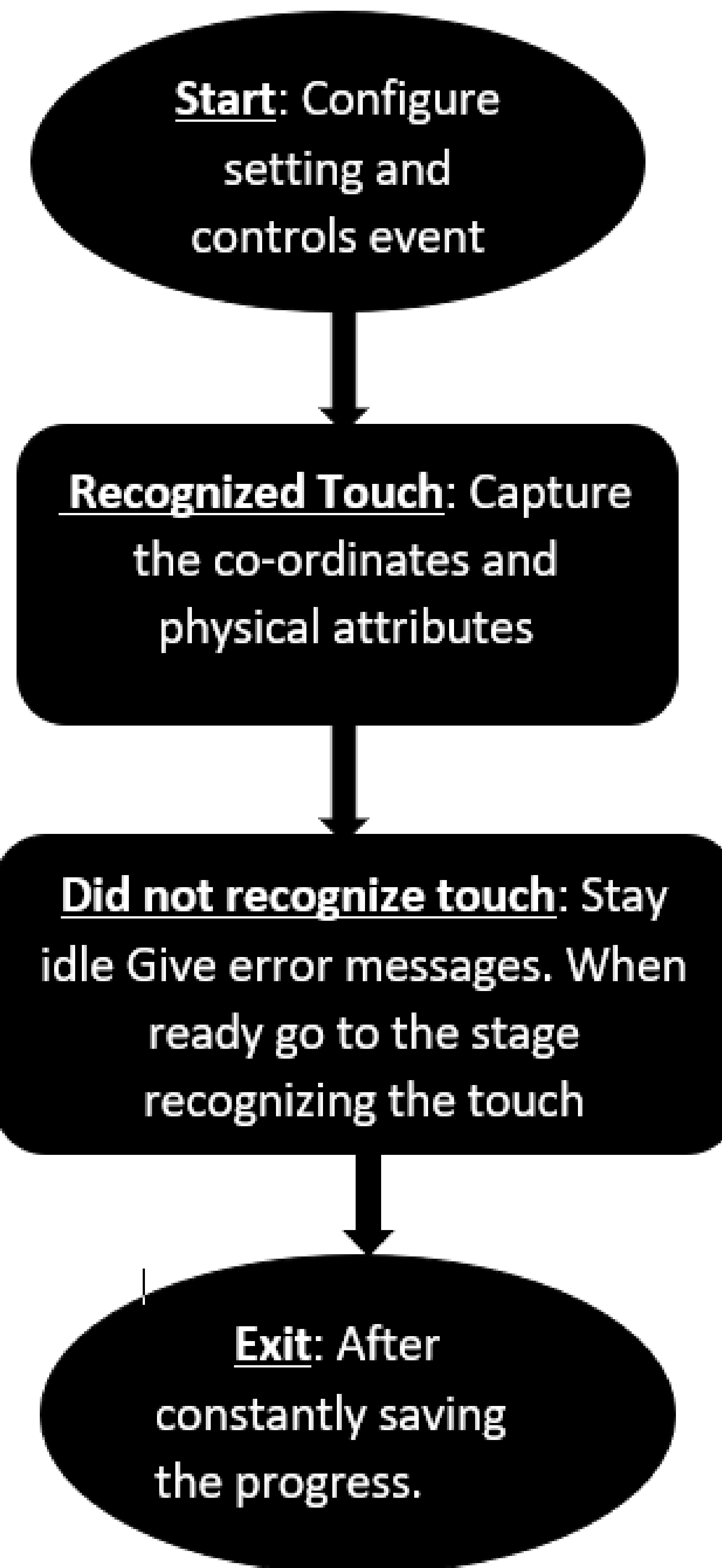
Key Requirements:

- GUI – Identify and Interpret object and process standard touch with QT and USB analyzer
- Object – Prototyping and 3D printing

Setup



Concept Development – GUI



Final Product:

- Touchscreen Data output
- TUIO/TURO protocol
- GUI Host system
- Screen output
- Tangible Object

Acknowledgements:

Client: Mitch Butzer, AIS
 Instructors: Dr. Steven Beyerlein, Dr. Feng Li
 Mentor: Jack Gonzalez