MEETING MINUTES (24/04/23)

HELD AT 1400PM

1. Meeting Attendance

Present:

- 500700909: Sarah Lin
- 510432948: Lucas Parker
- 510445039: Chris Fathallah
- 510524542: Jenny Lin
- 520444605: Oscar Fevre

Apologies and leaves of absence:

- N/A

2. Reports

There is nothing to report on given this is our first meeting.

3. General Business

The following items were discussed and/or worked on during this meeting:

i. Established hardware capabilities

We can utilise the following:

- STM32F3 Discovery
  - On-board I/O, RCC
  - 3-axis gyroscope (through I2C)
  - 3-axis accelerometer (through SPI)
  - Capacitive touch sensor inputs x8
- WALLE Hardware
  - Pan/Tilt Unit Interface Board
    - Servo Module (20 – 160 degrees)
  - 3-axis gyroscope
  - 3-axis accelerometer
  - Laser Range Sensor (LIDAR)
- Breadboard interface
  - Potentiometers
  - 7-seg display module
  - Joystick
  - LEDs
  - Membrane keypad
- Computer interface
  - PuTTY
  - Terminal
  - PC sound/FILES
  - Mouse, joystick, gamepad

        - Python/MATLAB code integration

ii. Discussed project scope and theme
    - Themes
        - Kill Stewart
        - Changing our Tron marks, break into and out of Stewart's office

iii. Element/module ideas
    - Joystick to control the tilt/pan
    - 7-seg display as the countdown timer
    - 4x4 number pad for user input (a password, or code)
    - Serial input for computer screen riddle/question with PuTTY
    - Capacitive touch sensor as a thumbprint
    - A "hint" button, which interrupts and knocks down the timer
    - Chris' Box idea, where the LIDAR is in an opaque box, and the user has to pan/tilt to find the tiny hole exit
    - Rush Hour game idea, where the LIDAR sits on the red car and points outward
    - Holey Moley game with the tilt, Hole 4 at Chatswood Holey Moley, 16 Newtown Holey Moley
    - Potentiometers linked like a "safe cracking" device, does a buzzer if it's the right direction (demonstration of analog input)

iv. Assign roles and responsibilities
    - Sarah Lin: Timers
        - 28-seg display (4x 7-seg)
        - Integrated timer from STM32
    - Lucas Parker:
        - Pan/Tilt
    - Chris Fathallah:
        - Joystick
    - Jenny Lin: Serial In/Out
        - Digipad: When you enter a number, it appears in Putty
        - Hash code for termination
        - Wait until LIDAR flag, then wait for the marks to be changed, then print "You're not Stewart!"
    - Oscar Fevre: Capacitive Touch Sensor

4. Date of next meeting:

- **01/05/23**

5. Close of meeting

- **1700PM**

MEETING MINUTES (02/05/23)

HELD AT 1400PM

6. Meeting Attendance

Present:

- Sarah Lin
- Jenny Lin
- Oscar Fevre
- Chris Fathallah
- Lucas Parker

Apologies and leaves of absence:

- N/A

7. Reports

The following updates were made and items completed since the time of the last meeting:

v. Reading from I2C

Jenny, Chris and Lucas finally figured out how to read from I2C, by utilising the SLC and SDA connections and linking them up to the correct ports.

vi. 7-Seg Timer Display

Sarah made progress with the 7-Seg Timer, implementing a breadboard and digital logic to light up particular elements on the LEDs.

vii. Digipad Progress

Jenny made some progress with the Digipad, located a datasheet and began determining the 4x4 matrix it outputs.

8. General Business

The following items were discussed and/or worked on during this meeting:

viii. Capacitive Touch Sensor

Oscar to initiate the capacitive touch sensor and determine how to add functionality with the STM32.

ix. Digipad input

Jenny to determine the correct input required for the Digipad, enabling it to receive user input. Also to work on connecting it to a breadboard or STM32.

x. Timer with 7-seg LEDs

Sarah to implement the timer code from Assignment 2, to set the STM32 alongside the 7-seg timer. To also look into the possibly of using multiple STM32's, to meet the port requirement.

xi. Joystick Functionality

Chris to look into the joystick functionality to later implement with the pan-tilt unit. Determine the scale it has in x and y directions.

xii. Calibrating Sensors

Lucas to determine the range of the servo motors on the PTU, and to set bounds they can travel between. To collaborate with Chris to implement the joystick when complete.

9. Date of next meeting:

- **09/05/23**

10. Close of meeting

- **1700PM**

MEETING MINUTES (09/05/23)

HELD AT 1400PM

11. Meeting Attendance

Present:

- Jenny Lin
- Oscar Fevre
- Chris Fathallah
- Lucas Parker

Apologies and leaves of absence:

- Sarah Lin (had to attend a MoTeC lecture for FSAE)

12. Reports

The following updates were made and items completed since the time of the last meeting:

xiii. Joystick Integration

Chris and Lucas successfully integrated the joystick movement of the WALLE, and enabled the LIDAR reading after some reconfiguration of ADC and the HAL.

xiv. Serial TX/RE

Jenny successfully demonstrated transmission and receiving with one board via PuTTY.

xv. 7-Seg LEDs

Sarah made progress with the LEDs but may have blown some up by accident. Good progress made though with digital logic.

xvi. Capacitive Touch

Oscar sourced datasheets and videos on capacitive touch sensing, and understands that project more now.

13. General Business

The following items were discussed and/or worked on during this meeting:

xvii. Timer module for LIDAR game

Lucas will work on integrating the timer module from Assignment 2, to allow the functionality of the LIDAR game to work: the user has to hold the LIDAR against the target for a full free seconds, to advance to the next stage.

xviii. Capacitive Touch

Oscar to continue work on the capacitive touch, to enable first with breadboard then to integrate the STM32.

xix. Joystick Tuning + Notion

Chris to work on tuning the joystick to allow for smoother user input and motion. Chris to also establish the Notion for document and nice PDFs.

xx. 7-Seg LEDs

With new 7-seg displays, Sarah to continue developing the countdown timer from 5 minutes as displayed during the entire game.

xxi. Serial TX/RE

Jenny to on board her completed software for transmission and receiving onto the STM32.

14. Date of next meeting:

- **16/05/23**

15. Close of meeting

- **1700PM**

MEETING MINUTES (16/05/23)

HELD AT 1400PM

16. Meeting Attendance

Present:

- Sarah Lin
- Jenny Lin
- Oscar Fevre
- Chris Fathallah
- Lucas Parker

Apologies and leaves of absence:

- N/A

17. Reports

The following updates were made and items completed since the time of the last meeting:

xxii. Timers and Interrupts

Lucas made progress with timers, converting TIM2 to TIM3 to operate with TIM2 in main-project-base, occupied by the servos

xxiii. Tuning Joysticks

Chris updated the joystick bounds and tuned the system to enable for smoother user interface

xxiv. Capacitive Touch

Oscar established the two breadboards and grew the system to three resistors and one capacitor.

xxv. Digipad

Jenny created a 4x4 matrix for the Digipad to enable debugging during the meeting.

xxvi. 7-Seg Timer Countdown

Sarah made progress with the 7-seg countdown by interfacing with serial output for the STM32.

18. General Business

The following items were discussed and/or worked on during this meeting:

xxvii. Timers and Interrupts

Lucas to continue progress on timers, to integrate it properly into the main file with the servos running simultaneously.

xxviii. Joystick Tuning

Chris to further refine the joystick tuning, in both x and y directions.

xxix. IMU

Sarah to establish the IMU with reading from the gyro, North/East/South/West.

xxx. Capacitive Touch

Oscar expanded the system to six (6) inputs, with two capacitors and six resistors. To establish a task (playing Twinkle Twinkle) with this new system.

xxxi. Digipad

Jenny to progress with the Digipad, by creating inputs for each row and column to read from the data, now that the debugging with LEDs works.

19. Date of next meeting:

- **19/05/23**

20. Close of meeting

- **1400PM**

MEETING MINUTES (19/05/23)

HELD AT 1400PM

21. Meeting Attendance

Present:

- Jenny Lin
- Chris Fathallah
- Lucas Parker

Apologies and leaves of absence:

- Oscar Fevre
- Sarah Lin

22. Reports

The following updates were made and items completed since the time of the last meeting:

xxxii. Timers and Interrupts

Lucas successfully integrated timers/interrupts with the main file of code! Moving onward to LIDAR checking for this meeting.

xxxiii. Digipad

Jenny successfully interfaced the Digipad keypad, able to type in the password key and interface via serial TX/RE.

xxxiv. Joystick Tuning

Chris made additional progress on tuning of the joysticks, creating a parabolic curve for the y-axis and plotting a linear transformation on the x-axis.

23. General Business

The following items were discussed and/or worked on during this meeting:

xxxv. Timers and Interrupts with LIDAR

Lucas to finalise the integration of LIDAR waypoints by creating six locations that reveal parts of the password.

xxxvi. Keypad and Serial I/O

Jenny to establish Serial I/O for one board, to communicate with the user via keyboard to PuTTY.

xxxvii. 3D Printing and Laser Cutting

Sarah to create housings for the modules via 3D printing. Lucas to help Sarah create a laser cut box for the PTU.

24. Date of next meeting:

- **22/05/23**

25. Close of meeting

- **1900PM**

MEETING MINUTES (22/05/23)

HELD AT 1000AM

26. Meeting Attendance

Present:

- Sarah Lin
- Jenny Lin
- Oscar Fevre
- Chris Fathallah
- Lucas Parker

Apologies and leaves of absence:

- N/A

27. Reports

The following updates were made and items completed since the time of the last meeting:

xxxviii. Timers and Interrupts

Lucas completed the merge of timers with the LIDAR readings! Ready for full implementation with waypoints.

xxxix. Tuning Joysticks

Chris updated the joystick bounds and tuned the system to enable for smoother user interface. Setup the buzzer to play when the countdown finished.

xl. Capacitive Touch

Oscar finalised capacitive touch and added serial interfacing to Python for playing sound.

xli. Digipad

Jenny finalised the keypad and input. Finished serial I/O with one board too.

xlii. 7-Seg Timer Countdown

Sarah finished the 7-seg displays, and with Chris added a buzzer when the countdown finished.

28. General Business

The following items were discussed and/or worked on during this meeting:

xliii. Integration of LIDAR waypoints with physical box

Lucas integrated the box with LIDAR waypoints and output to serial code.

xliv. 7-Seg Display and Buzzer

Chris and Sarah placed the 7-seg display in a mounting box, and integrated the buzzer within the case. LEDs visible from the exterior too.

xlv. Keypad

Jenny finalised the serial I/O code and attached the keypad with computer for PuTTY GUI.

xlvi. Capacitive Touch

Oscar arranged the capacitive touch with the STM32, and setup Python to input voltages to play sound.

xlvii. Final Touches!

Everyone put finishing touches on the minutes, documentation, and arrangement of the modules for presentation. Ready to go!

29. Date of next meeting:

- **23/05/23 (Date of Presentation)**

30. Close of meeting

- **1600PM**