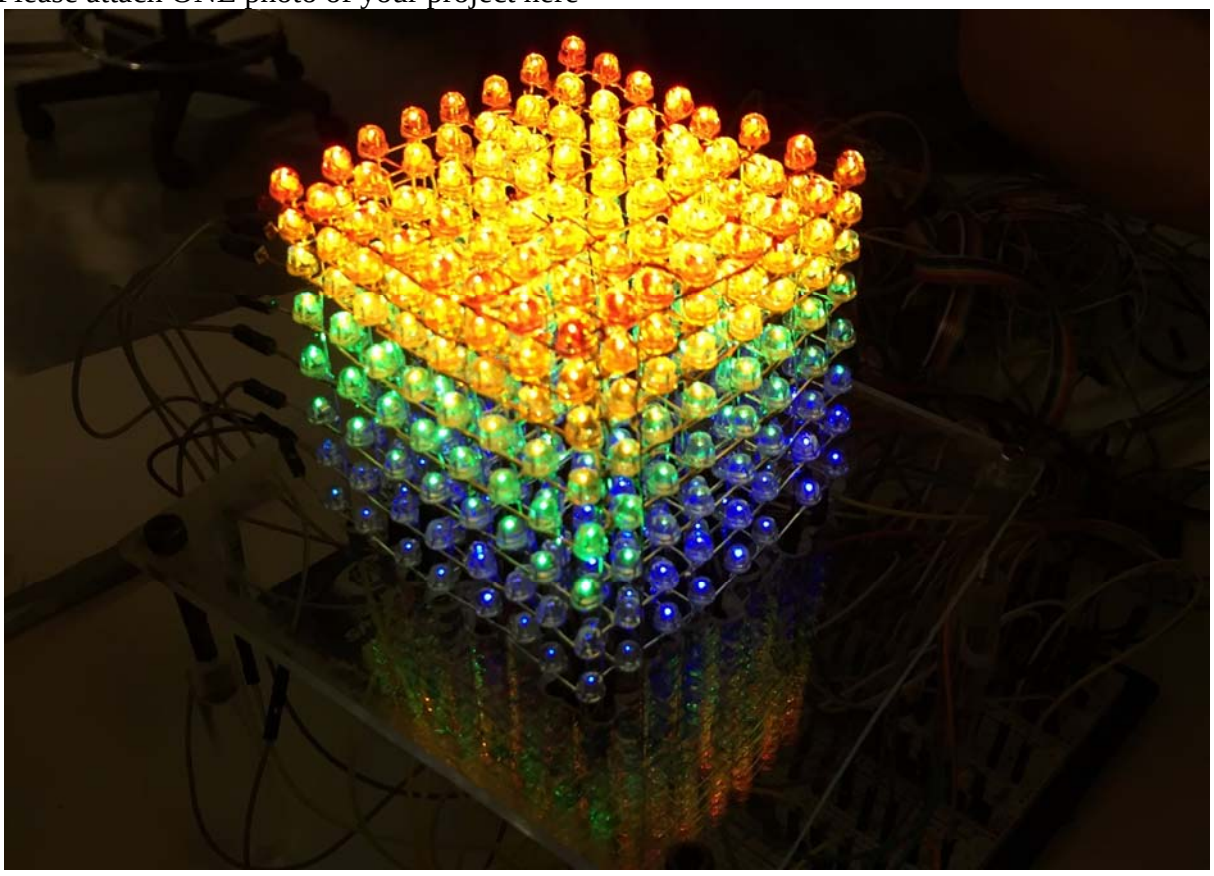
# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 1 |
| Project Title | Music Cube |
| Name of Student 1 | Wong Chun Ho |
| Name of Student 2 | Tsoi Tsz Chun |

Please attach ONE photo of your project here



Please list the functions of your project in point form

- ✓ Take analog signal from external music player with 3.5mm plug into ADC.
- ✓ Take sample from sound wave and perform Discrete Cosine Transform to identify frequency components.
- ✓ Show a three dimensional dynamic pattern on the 4-color-layered 8x8x8 LED cube (Red, yellow, green and blue)
- ✓ Analyze frequency components form sound wave then display them in corresponding circular layers.

# ELEC 3300 Project Summary Sheet

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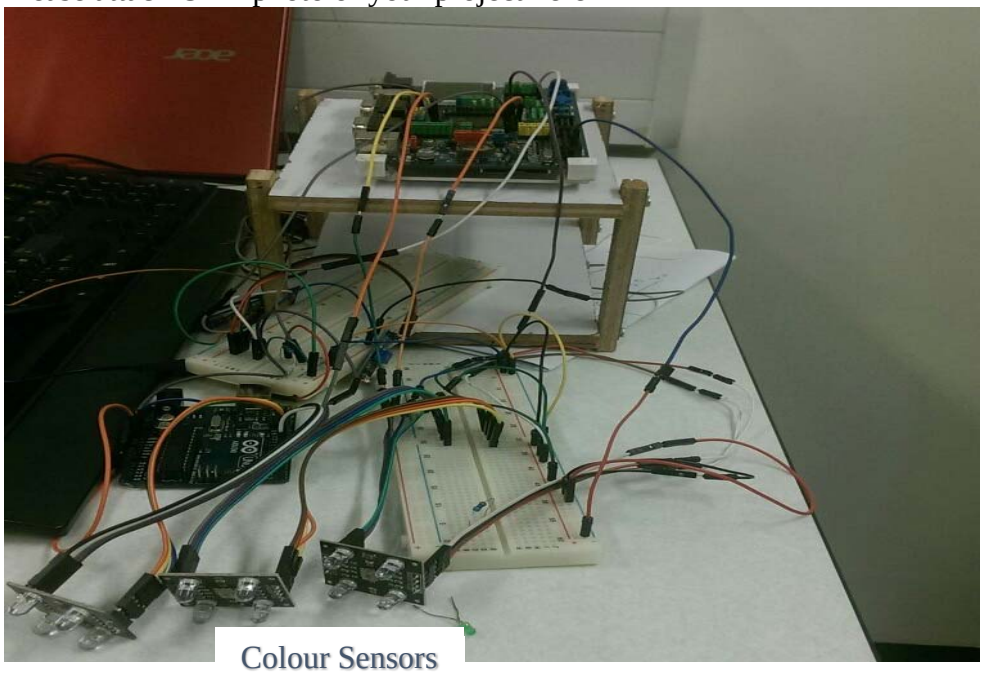
| | |
|---|---|
| Group Number | 2 |
| Project Title | Auto-tracking car |
| Name of Student 1 | Chan Ho Ken |
| Name of Student 2 | Li TongI |

Please attach ONE photo of your project here



Colour Sensors

Please list the functions of your project in point form

- choosing a colour to follow first, then three colour sensor will detect the colour of track and the car will drive on the colour track
  - the light senor locate in the front of the car to detect whether something prevent the car going or not.
  - another light senor locate at the botton to detect the black hole
  - when the car drive to black hole, user can choose other colour track that the car will drive in different track
- if the car is not locate in the track, we can use 3 buttons to drive the car forward, leftward and rightward

# ELEC 3300 Project Summary Sheet

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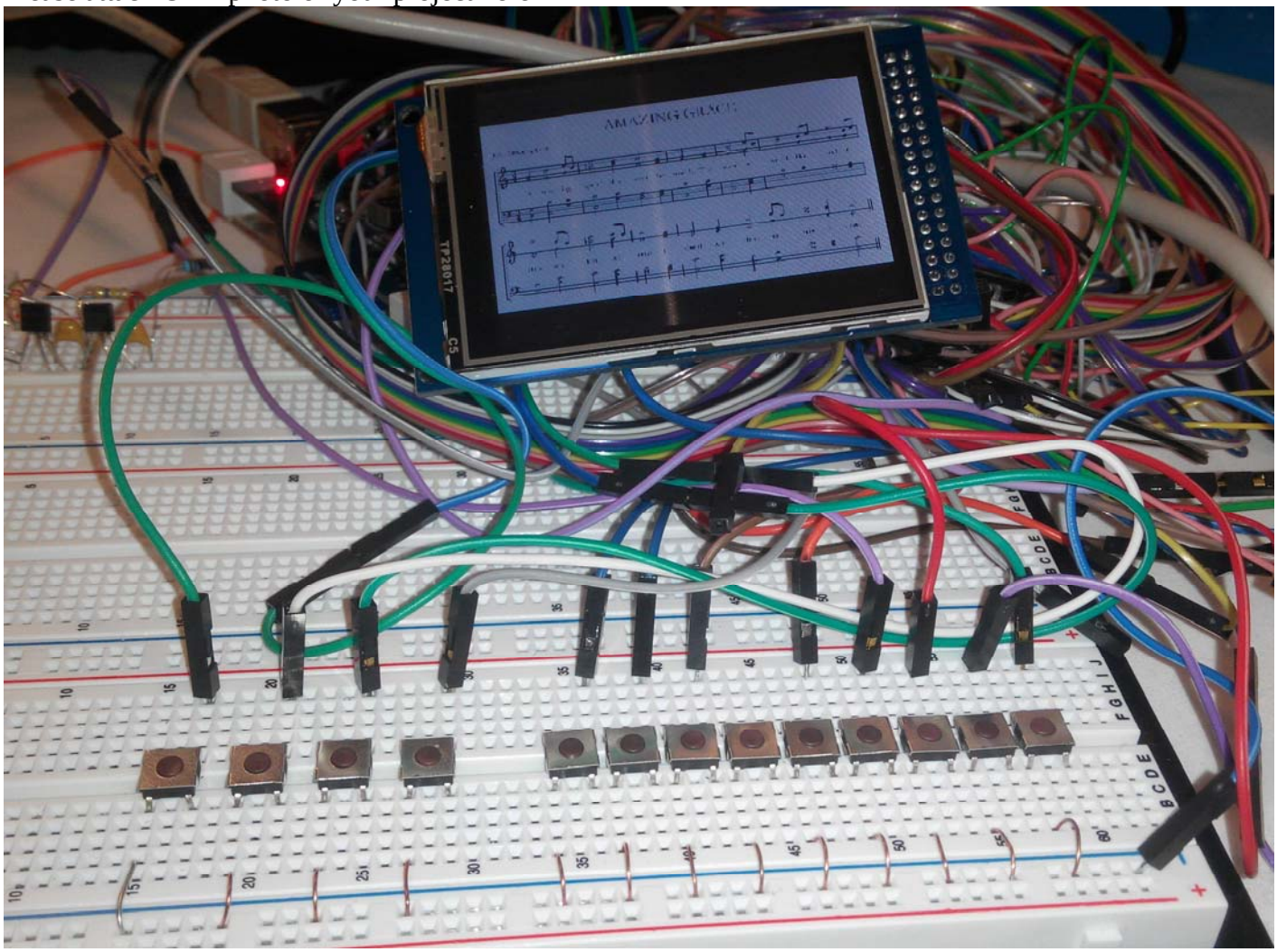
| | |
|---|---|
| Group Number | 3 |
| Project Title | Electronic piano |
| Name of Student 1 | Mok Kiu Lap |
| Name of Student 2 | Tsai Sing Chin |

Please attach ONE photo of your project here




Please list the functions of your project in point form

- Using TIM3 to generate different frequency PWM when pressing the piano keys
- Play different tone with the speaker
- Read sheet music from SD card
- Display the sheet music on the external LCD monitor
- Selecting different sheet music by pressing the next and previous button
- Record the key when playing piano
- Store the key info into SD card
- Replay the record from SD card

# ELEC 3300 Project Summary Sheet

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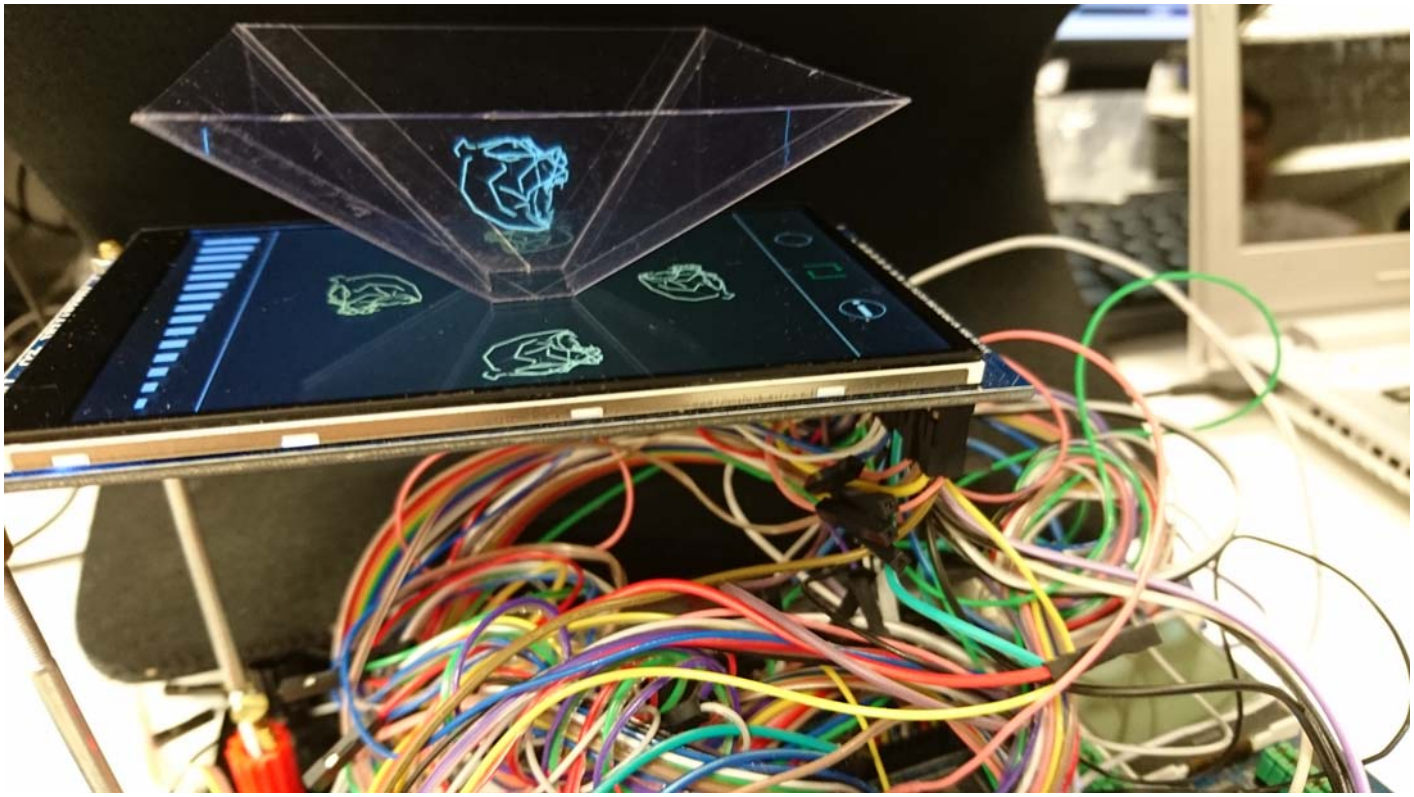
| | |
|---|---|
| Group Number | 4 |
| Project Title | Hologram displayer with built-in video converter |
| Name of Student 1 | Lok Wai Lok |
| Name of Student 2 | Cheung Ming Kwong |

Please attach ONE photo of your project here



Please list the functions of your project in point form

- Resize inputted video
- Convert resized video to four directional format
- Display 360 degree hologram through a transparent pyramid
- Looping and show information function
- Positioning mark guiding user to place the pyramid
- Adjustable frame rate

# ELEC 3300 Project Summary Sheet

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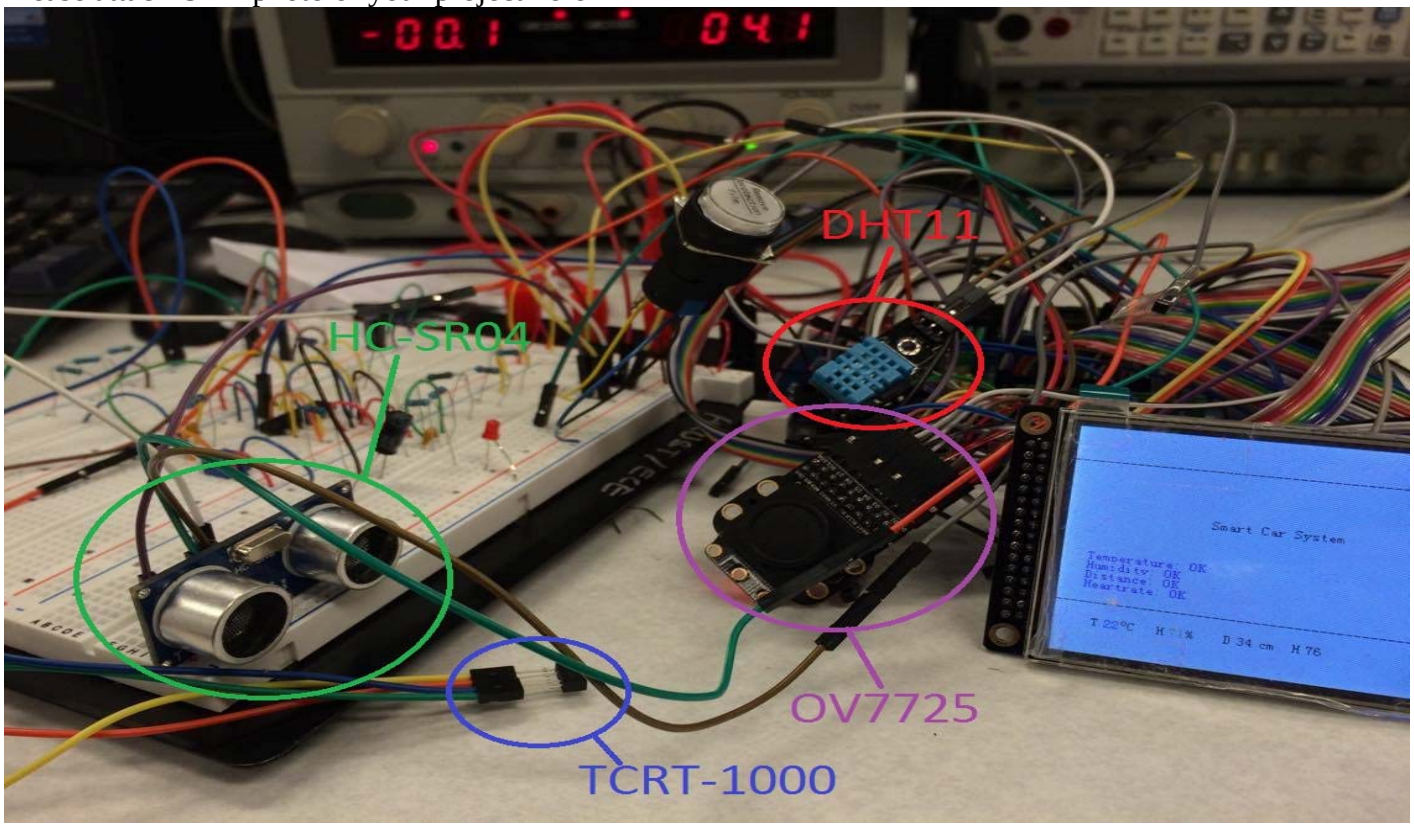
| | |
|---|---|
| Group Number | 5 |
| Project Title | Smart Car System |
| Name of Student 1 | Chu Chun Kit |
| Name of Student 2 | Lo Ka Kui, Kelvin |

Please attach ONE photo of your project here




Please list the functions of your project in point form

- Use temperature and humidity sensor (DHT11) to provide temperature and humidity measurement inside the car.
- Use Ultrasonic sensor(HC-SR04) to measure the distance of blind spot of the car
- If the distance is too close, the camera (OV7725) will be triggered to display the current situation near the car on the LCD.
- Use Reflective Optical Sensor (TCRT-1000) to measure the blood flow by the reflected light in order to measure the driver's heart rate
- Use LCD touch screen to provide a graphic user interface
- Use LCD touch screen to give corresponding response e.g. alert when warning appear(e.g. too high temperature, too high heart rate, too close distance)
- The frequency of the alert buzzing will be altered according to the distance. When the distance is closer, the buzzer will beep at a faster.
- Driver can manually turn off the alert by touching the LCD.
- Driver can manually turn on and turn off the camera by pressing the button on steering wheel.

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
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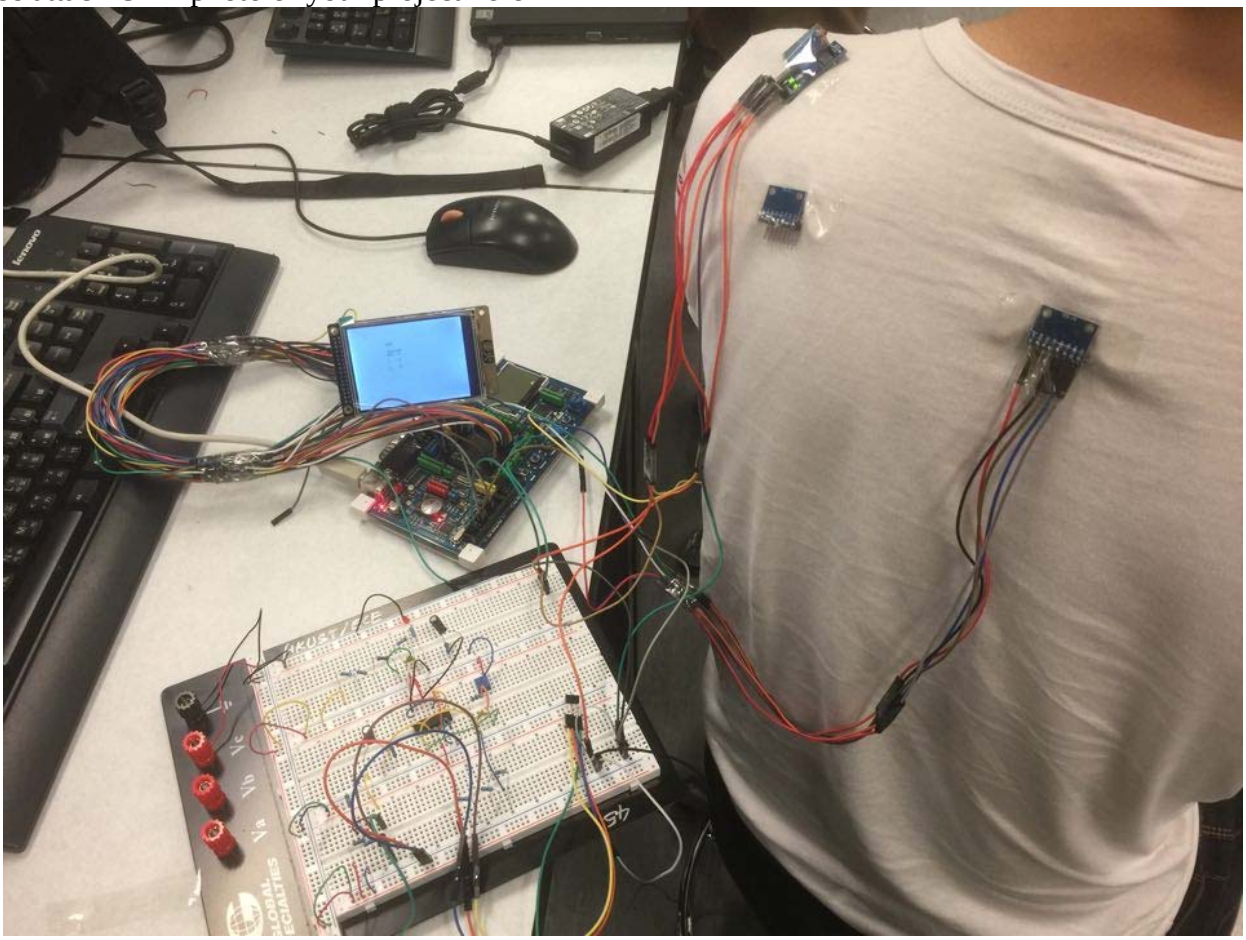
| | |
|---|---|
| Group Number | 6 |
| Project Title | Smart Clothes |
| Name of Student 1 | Lau Ka Kiu, Ives |
| Name of Student 2 | Yu Kin Yat |

Please attach ONE photo of your project here



Please list the functions of your project in point form

- Construct the position sensor for checking the proper posture.
- Use the heart pulse sensor to measure the user heart rate.
- Implement a sensor to measure the surrounding temperature and humidity.
- Attach a light intensity sensor to check if the environment is suitable for working.
- Take the correct posture data as the reference data.
- Compare the user posture by position sensor continuously.
- Use a LCD touching monitor screen as a user interface of the system
- Select the checking category through the LCD touching monitor.
- The system will print the warning message on the LCD touching monitor when the surrounding is too dark, the temperature is low and the body posture is unappropriated.

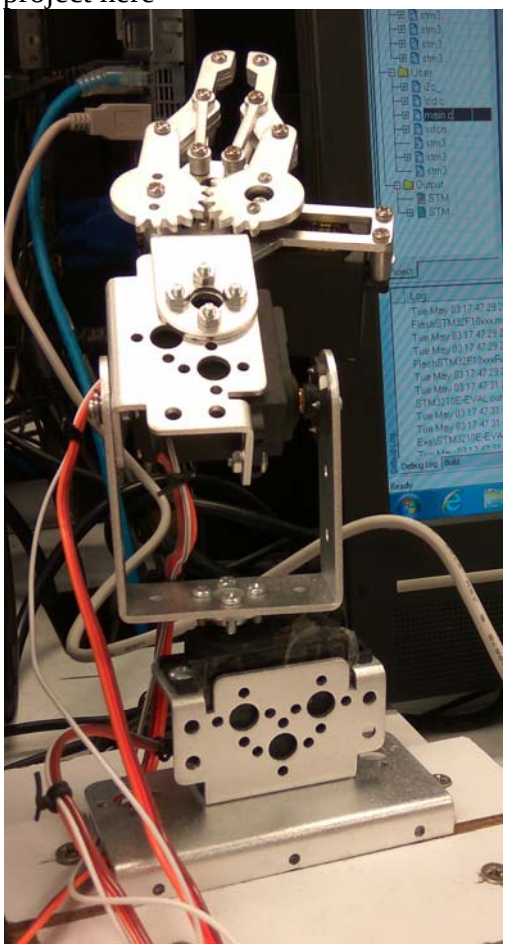
# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.

All the fonts used in this should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 7 |
| Project Title | Self-learning robotic arm |
| Name of Student 1 | LO, Chun Sing |
| Name of Student 2 | TANG, Hon Keung |

Please attach ONE photo of your project here



Please list the function of your projects in point form

- Users can train this self-learn robotic arm to perform various tasks without any technical skills by two ways
  - physically guiding it
  - attaching GY-80 sensor on your arm to allows the robot to learn from your arm movement, and turning the knob of the potentiometer to let the robot knows how wide or narrow the clamp claw should open to grip objects
- After the training, the robotic arm is capable of mimicking the tasks you taught it
- Users can control the robotic arm to perform tasks real-time by attaching GY-80 sensor on your arm to allows the robot to learn from your arm movement, and turning the knob of the potentiometer to let the robot knows how wide or narrow the clamp claw should open to grip objects

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
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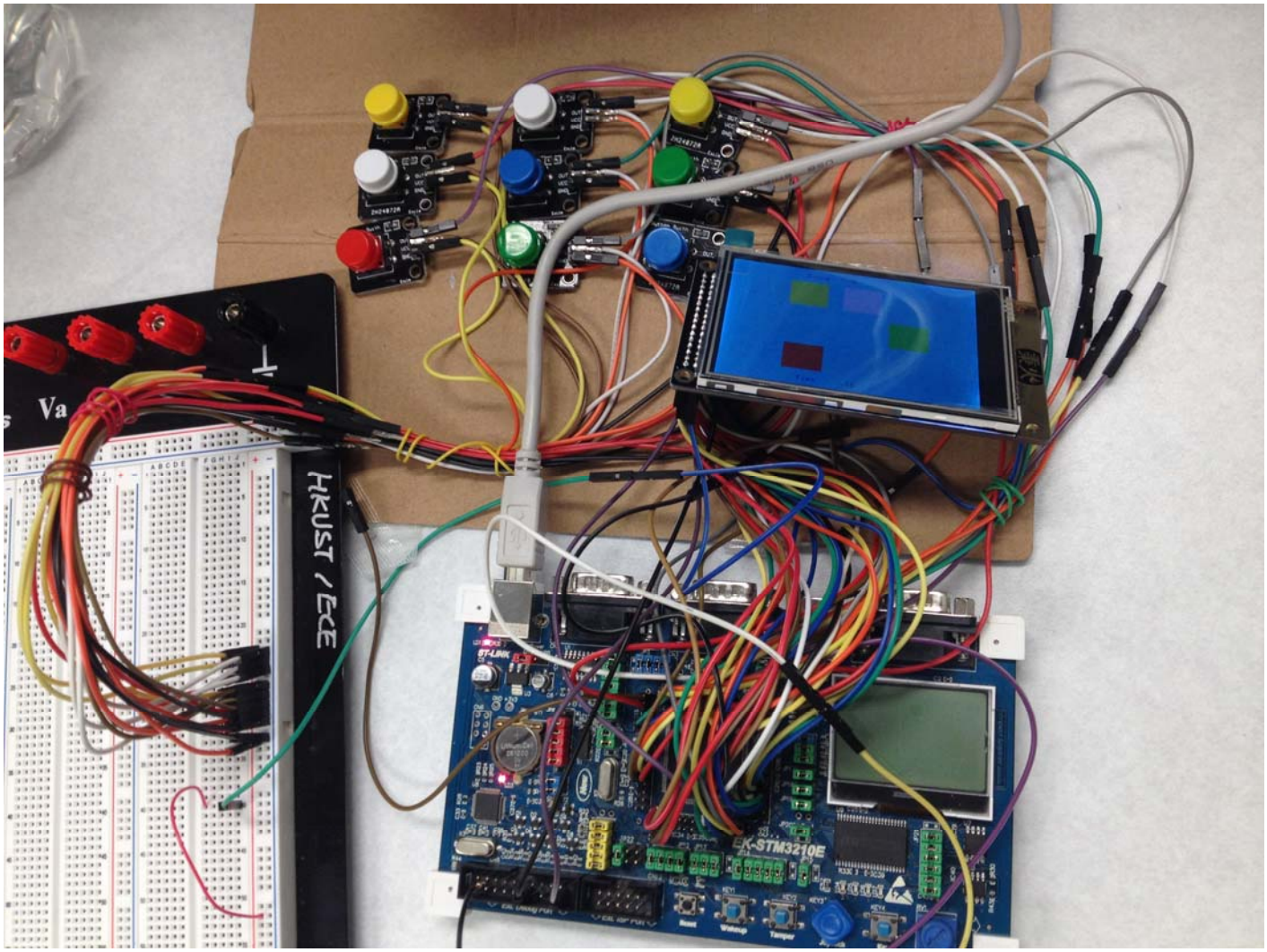
| | |
|---|---|
| Group Number | 8 |
| Project Title | Game Therapy |
| Name of Student 1 | WONG Pak Hin |
| Name of Student 2 | CHAN Kwok Leung |

Please attach ONE photo of your project here




Please list the functions of your project in point form

- The LCD connected with STM32 displays implementation of games collection.
- Users use 3-by-3 buttons to interact with a collection of games
  - Color Blind game test player's sensitivity to colors;
  - Number Comparison, players use two buttons to compare two numbers;
  - Color games test players' ability in memorizing and rearranging grids.
- Different Levels are added to increase playability.
- Record Time and Score for further therapeutic analysis

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
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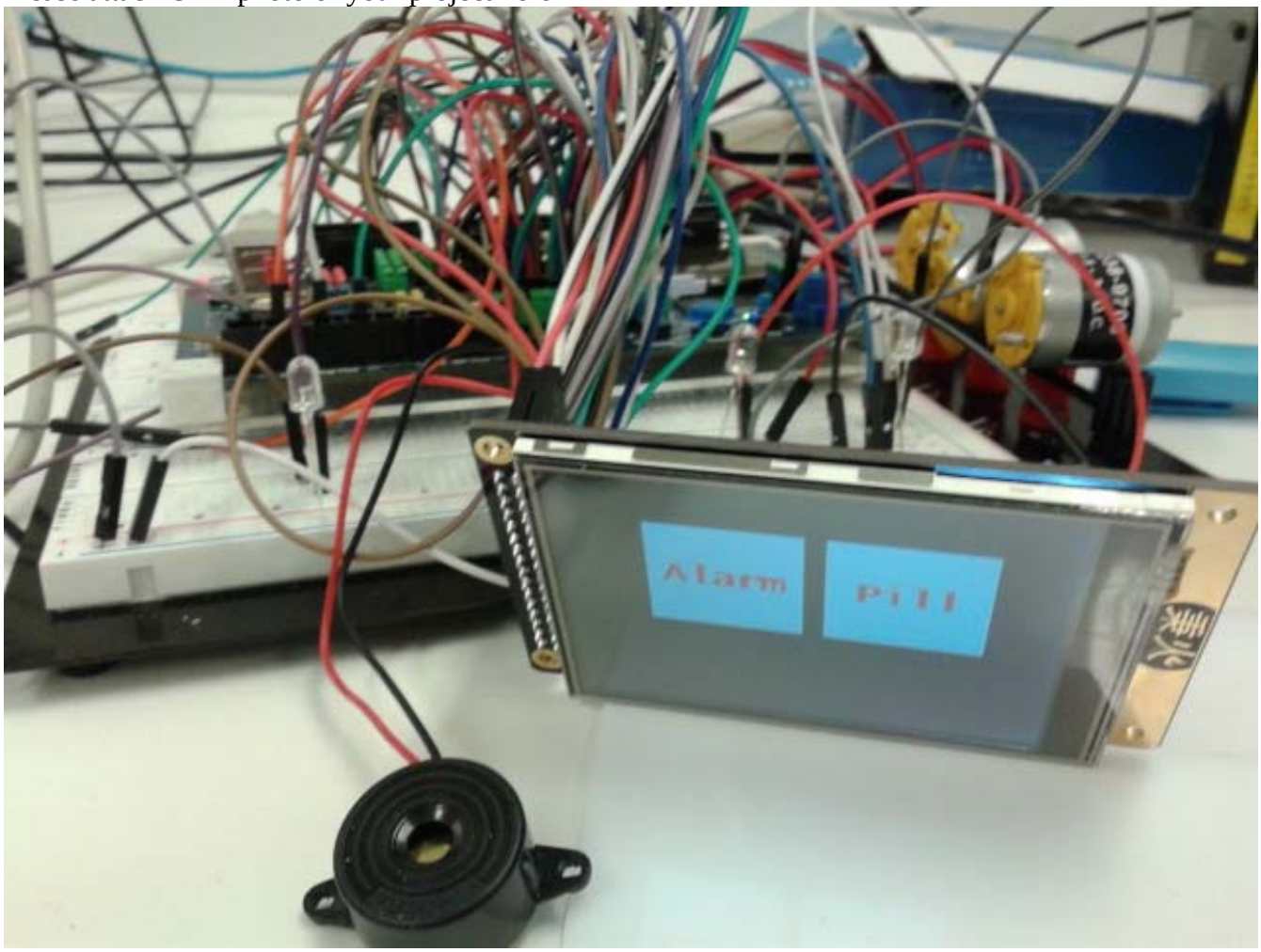
| | |
|---|---|
| Group Number | 9 |
| Project Title | Pill Dispenser |
| Name of Student 1 | Ngo Yu Ki |
| Name of Student 2 | Lee Yan Ming |

Please attach ONE photo of your project here




Please list the functions of your project in point form

- Enter data (e.g. when a type of pill should be taken, the number of pills per type should be taken each time,etc.) via a touchscreen module
- Display data via the touchscreen module
- Keep time and remind user when to take his or her medicine by activating a buzzer
- Dispense the right type of pill(s) when required using a conveyor belt
- Differentiate pills by color with the help of a color sensor

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
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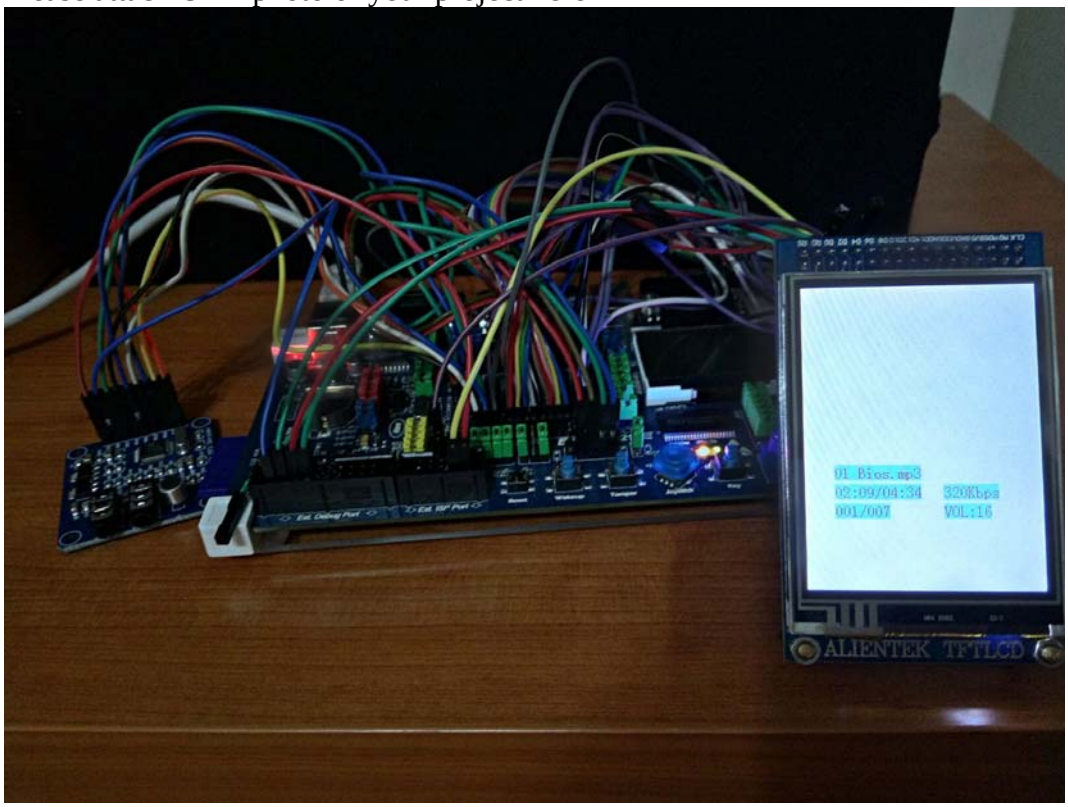
| | |
|---|---|
| Group Number | 10 |
| Project Title | MP3 Player |
| Name of Student 1 | Chan Ka Cheung |
| Name of Student 2 | Ng Ting Fung |

Please attach ONE photo of your project here




Please list the functions of your project in point form

- Access SD card and read music files.
- Play music files (.mp3, .wav)
- Volume control using joystick up and down button
- Play previous song and next song using the joystick left and right button
- Pause song by using the key4.
- Display music information: music name, playing time, bit rates of the songs, number of songs and the current volume.

# ELEC 3300 Project Summary Sheet

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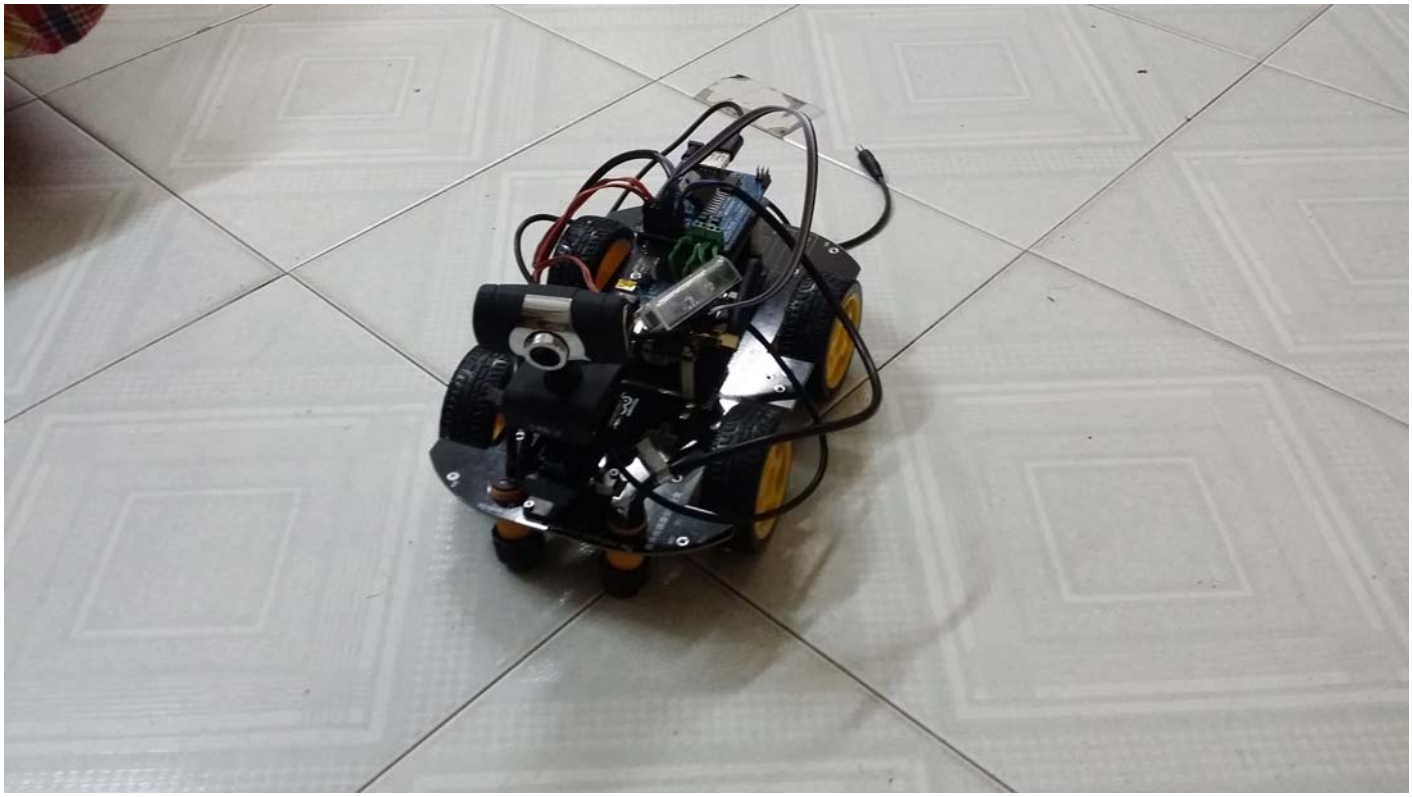
| | |
|---|---|
| Group Number | 11 |
| Project Title | Remote control car |
| Name of Student 1 | NG Andy |
| Name of Student 2 | POON King Sing |

Please attach ONE photo of your project here



Please list the functions of your project in point form

- Remote control
- Real time Wifi camera
- Infrared sensor
- Ultrasonic sensor

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
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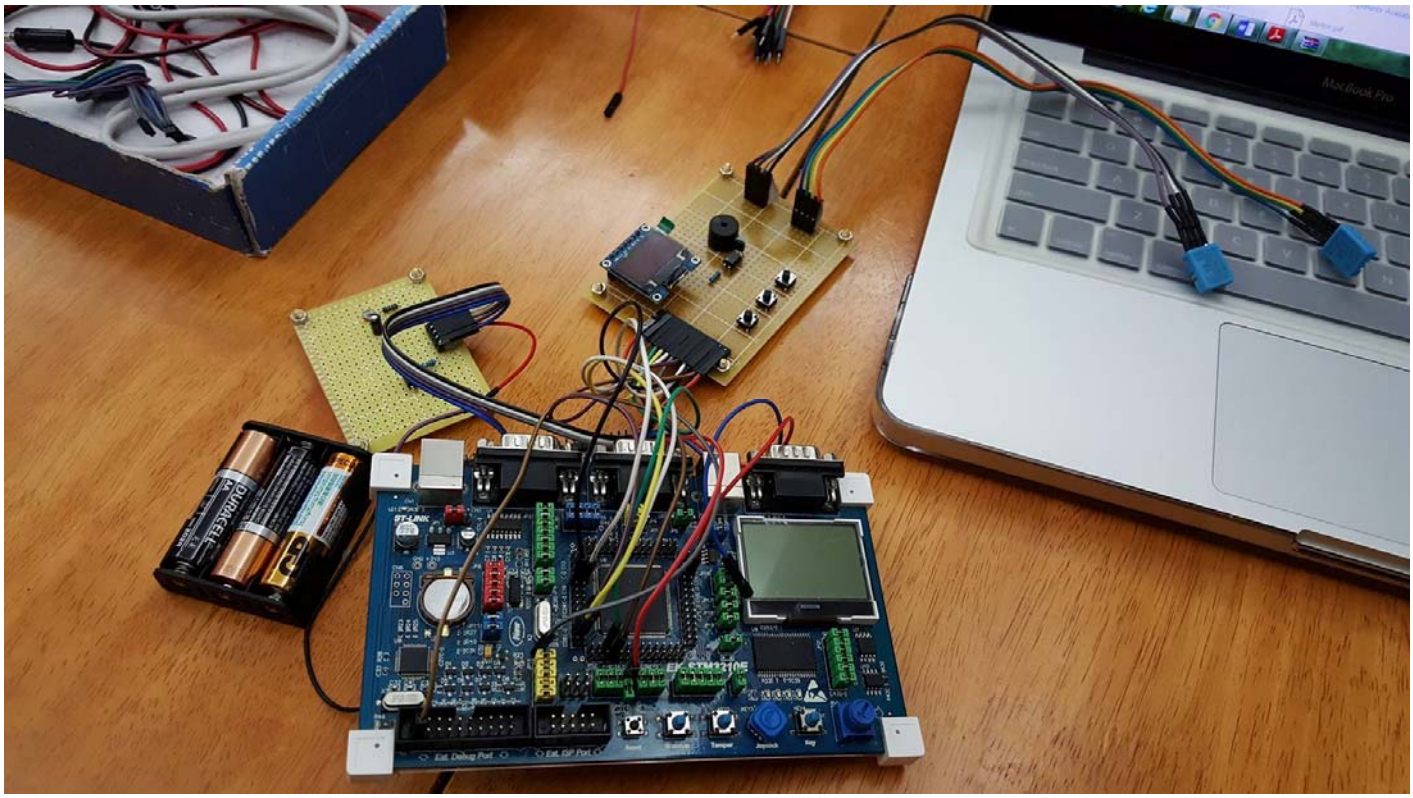
| | |
|---|---|
| Group Number | 12 |
| Project Title | Smart Temperature Sensor |
| Name of Student 1 | Chan Kwun Hei |
| Name of Student 2 | Hung Ka Ho |



Please list the functions of your project in point form

- Mainly used for monitoring temperature
- Use two sensors to detect two sets of data
- Two sensors provide a broader use of device(e.g. put in two different locations)
- Data will be shown on LED
- When temperature exceeds a certain temperature(different temperature for different sensor), alarm will be on
- Two sensors will give out alarm with different frequencies

# ELEC 3300 Project Summary Sheet

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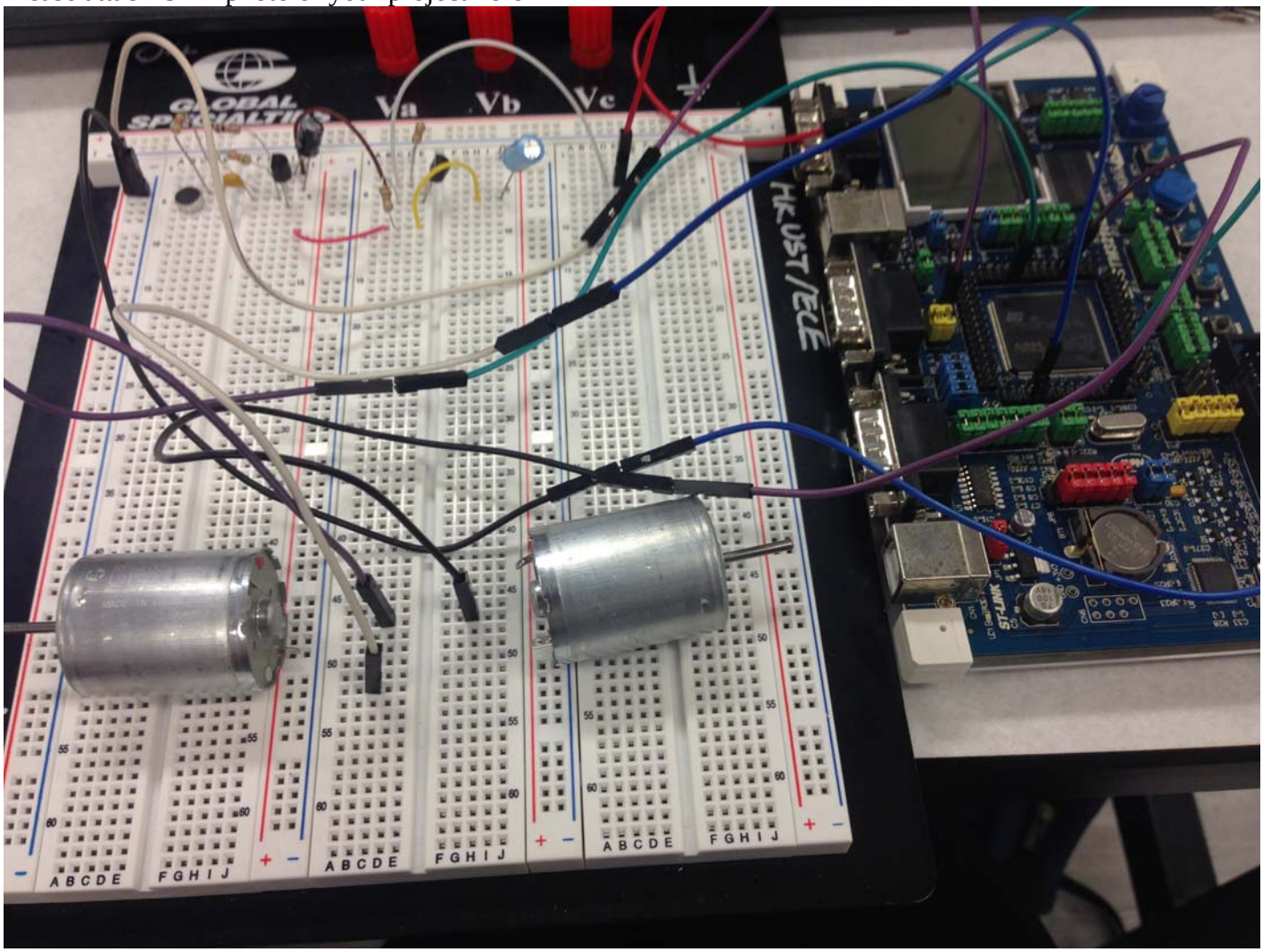
| | |
|---|---|
| Group Number | 13 |
| Project Title | voice recognition car |
| Name of Student 1 | CHAN Kam Lam |
| Name of Student 2 | WONG, Kai Chun |

Please attach ONE photo of your project here




Please list the functions of your project in point form

- The car is controlled by voice command of the user.
- The car can accelerate, decelerate, turning direction, or stop completely corresponds to different command.
- Users can record their voice as commands and it will be used during the recognition part.

# ELEC 3300 Project Summary Sheet

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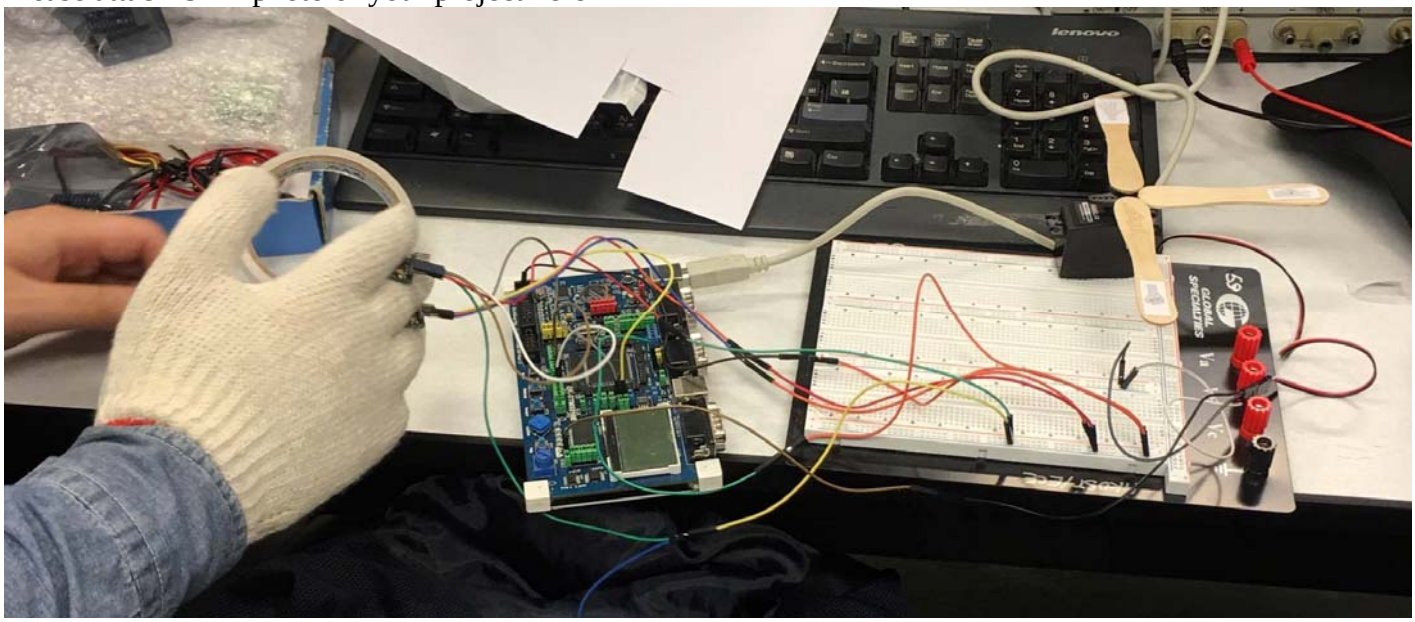
| | |
|---|---|
| Group Number | 14 |
| Project Title | Rock-scissor-paper robot |
| Name of Student 1 | Wong Hong Chun |
| Name of Student 2 | Seto Chak Fung |

Please attach ONE photo of your project here




Please list the functions of your project in point form

- randomly generate rock, paper or scissors signal.
- Count 3,2,1,start
- receives the signal comes from the sensor which connected to the player
- use 2 GY-80 compass to sense the fingers movement of user.
- Use mathematical method to improve its accuracy
- Analyses the signal, and distinguish whether the choice of user is rock, paper or scissors
- Use servo-motor to perform the choice of microcontroller
- Use LCD to display the result
- Store the result and accumulate it

# ELEC 3300 Project Summary Sheet

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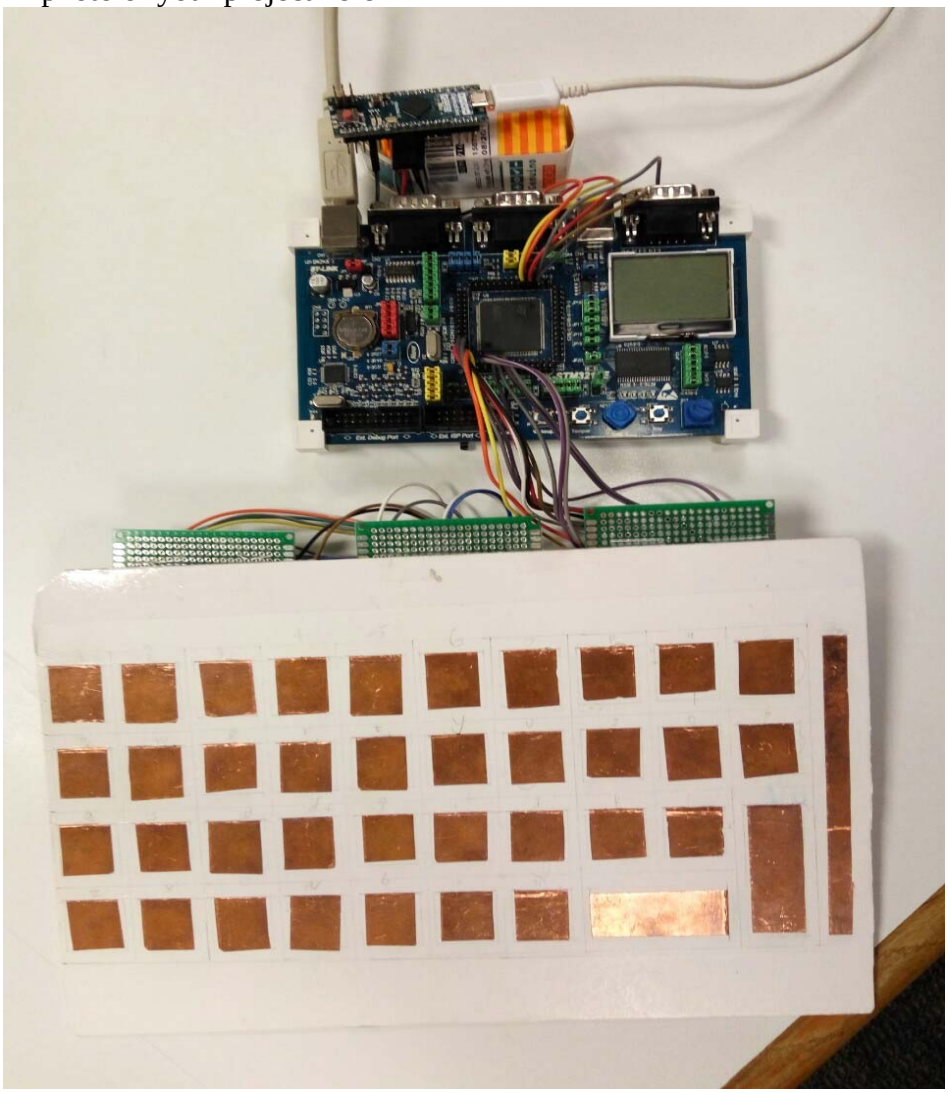
| | |
|---|---|
| Group Number | 15 |
| Project Title | Key-Mouse |
| Name of Student 1 | LIU Yuchen |
| Name of Student 2 | Yeo Yee Shien |

Please attach ONE photo of your project here



Please list the functions of your project in point form

- Design and build a capacitance sensitive keyboard with mouse function for computer.
- Used copper tape as each key on board and simulate its function for normal computer keyboard by Human Interface Device protocol.
- For each key, state of touch or untouched is detected by ADC.
- 4-1 Multiplexer are employed so that 39 keys can be connected to 10 ADC.

# ELEC 3300 Project Summary Sheet

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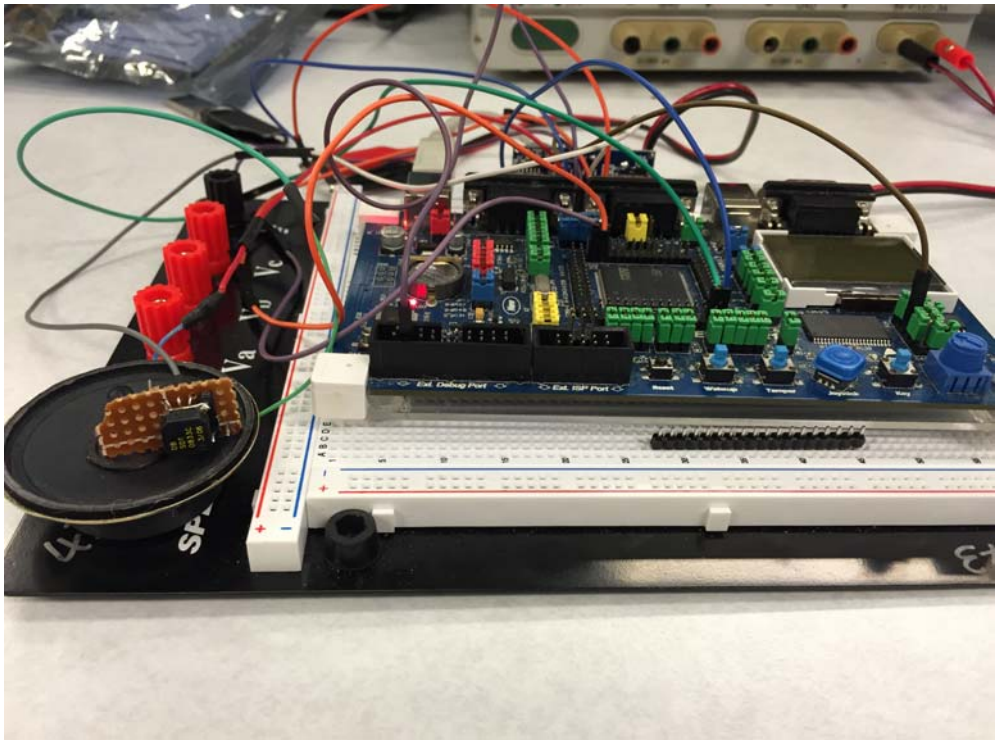
| | |
|---|---|
| Group Number | 16 |
| Project Title | Smart Crutch |
| Name of Student 1 | Chan Yuk Lam |
| Name of Student 2 | Chan Mei Yee |

**Project Photo**



**Functions—Smart Crutch**

- **Main purpose: The device mainly for distance detection and alarm user by producing vibrations with different sounds according to different distances detected.**
- **Physically attached on crutch or umbrella or put on fixed position**
- **Distanced calculation: Estimate the distance by calculating the time between the sending and the receiving time of ultrasonic wave. With 1 m distance is detected, vibration and sounds will be generated to alarm users.**
- **Display of distance: LCD displays the distance in HEX form through converting the analog signal to digital. With accuracy to 0.3cm**
- **Sound Alarm-- version1: The buzzer gives alarm when the distance reaches the threshold distance (around 1m) to notice the users to stop walking by triggering with timer.**
- **Sound Alarm ---version 2: Different frequencies (1800Hz and 2500Hz) sound will be given by the speaker according to different distance ranges by generating different PMW waves**
- **Vibration alarm: Vibration of the motor will be initiated if the distance reaches threshold distance in case they can't hear the sound alarm clearly in outdoor environment with too many noises.**

# ELEC 3300 Project Summary Sheet

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| | |
|---|---|
| Group Number | 17 |
| Project Title | Quadcopter |
| Name of Student 1 | Saif Ahmed |
| Name of Student 2 | Flora Weil |

Please attach ONE photo of your project here

Please list the functions of your project in point form

- Angle measurements: GY-80 3 axis gyroscope and accelerometer readings via I2C communication protocol used to calculate roll and pitch in three directions.
- Motion: brushless motors signaled by MCU, controlled by ESCs
- Stabilization and orientation control: Set point received from RC transceiver, input received from GY-80 multi-sensor board, output tilt angle and error computed with PID algorithm, corresponding PWM signal sent to 4 ESCs
- Navigation: RC transmitter and receiver used to receive PWM signals corresponding to various desired positions

# ELEC 3300 Project Summary Sheet

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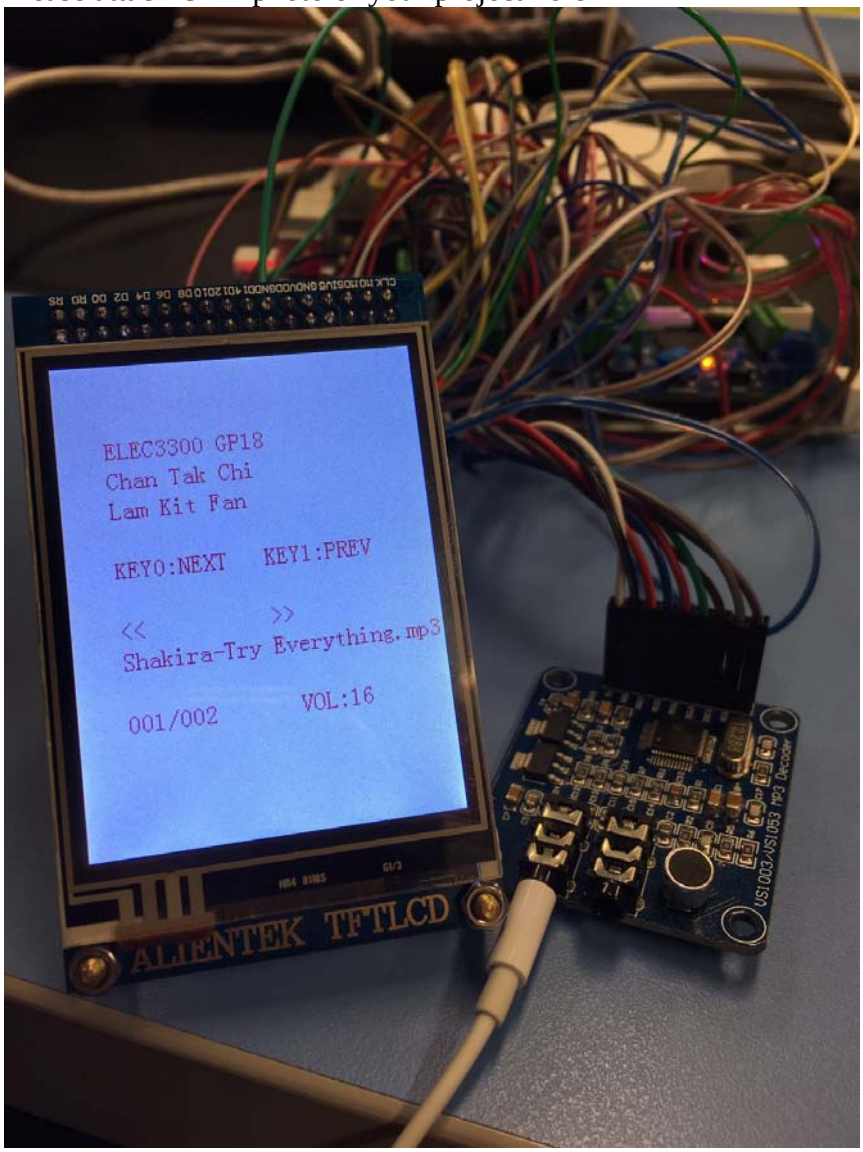
| | |
|---|---|
| Group Number | 18 |
| Project Title | Music Player with Mini Game |
| Name of Student 1 | CHAN, Tak Chi |
| Name of Student 2 | LAM, Kit Fan |

Please attach ONE photo of your project here




Please list the functions of your project in point form

- Using stm3210E provided by this course
- 2.8” LCD display with resistance touch sensor
- SD card slot for multi-media file storage
- VS1003B MP3 decoder IC (With 3.5mm audio jack)
- Music player: play MP3/WAV format music file

# ELEC 3300 Project Summary Sheet

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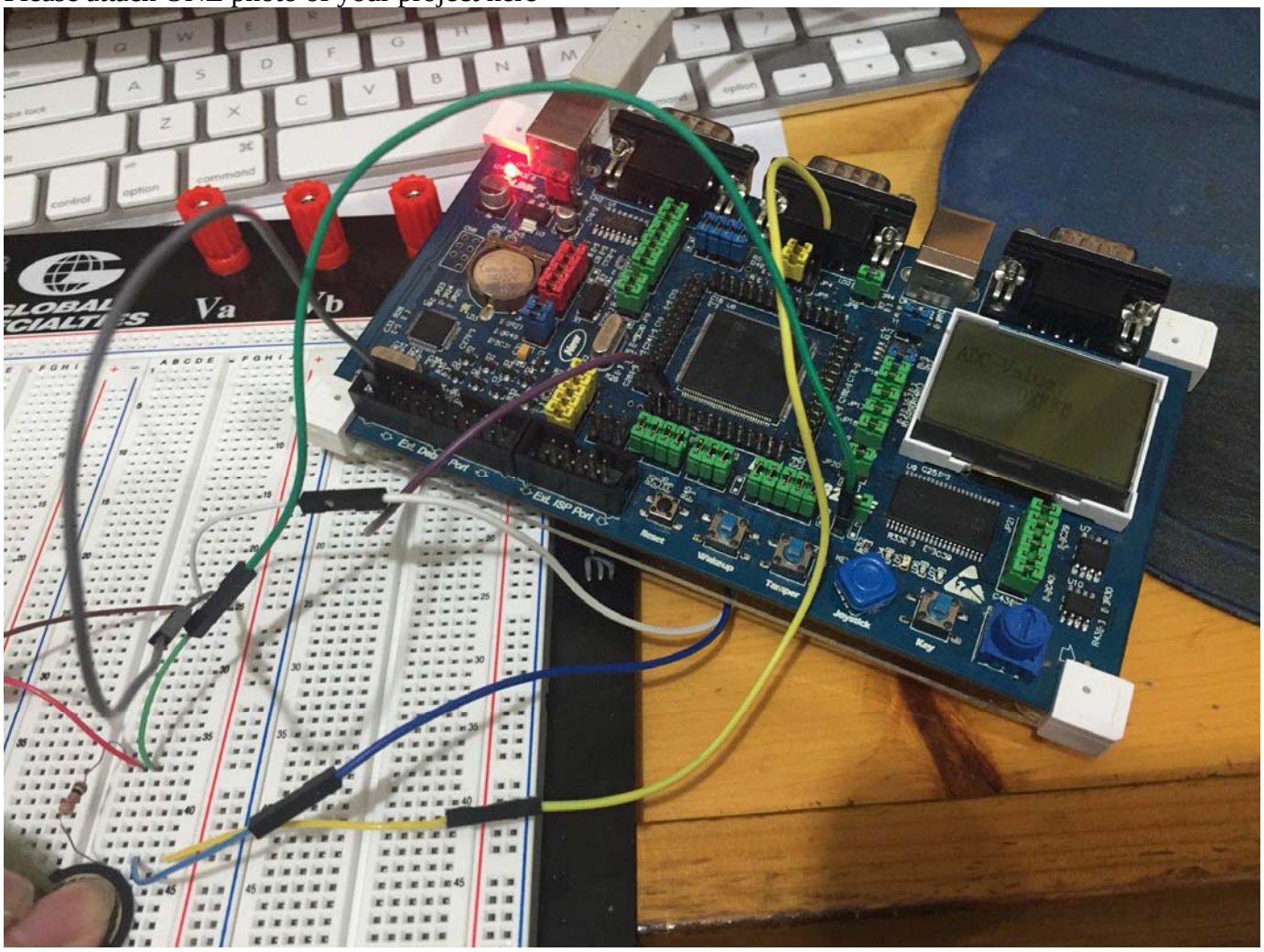
| | |
|---|---|
| Group Number | 19 |
| Project Title | Prototype for Foot Pressure Monitoring System |
| Name of Student 1 | Lai Ka Chun |
| Name of Student 2 | Sung Ka Yu |

Please attach ONE photo of your project here



Please list the functions of your project in point form

- Detect and measure the pressure exerted on the two pressure sensors
- Compute the pressure value of the two sensors to determine if the running posture is proper
- Issue a warning sound if the computed result shows the running posture is not correct
- Display the pressure value of the two sensors on an LCD screen
- Send measured pressure information from STM32 to Android mobile through Bluetooth
- Send notification to user's mobile phone if the running posture is not correct using a tailor made mobile application

# ELEC 3300 Project Summary Sheet

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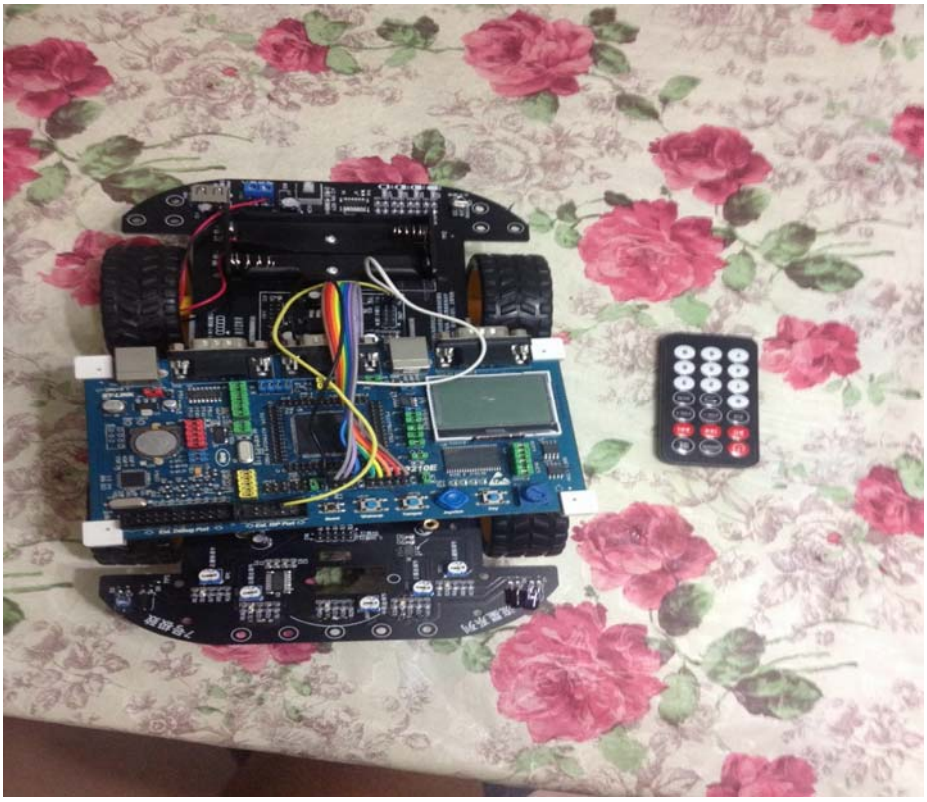
| | |
|---|---|
| Group Number | 20 |
| Project Title | Infrared controll car |
| Name of Student 1 | Sat Ho Hin 20126123 |
| Name of Student 2 | Chan Lai Man 20115423 |

Please attach ONE photo of your project here



Please list the functions of your project in point form

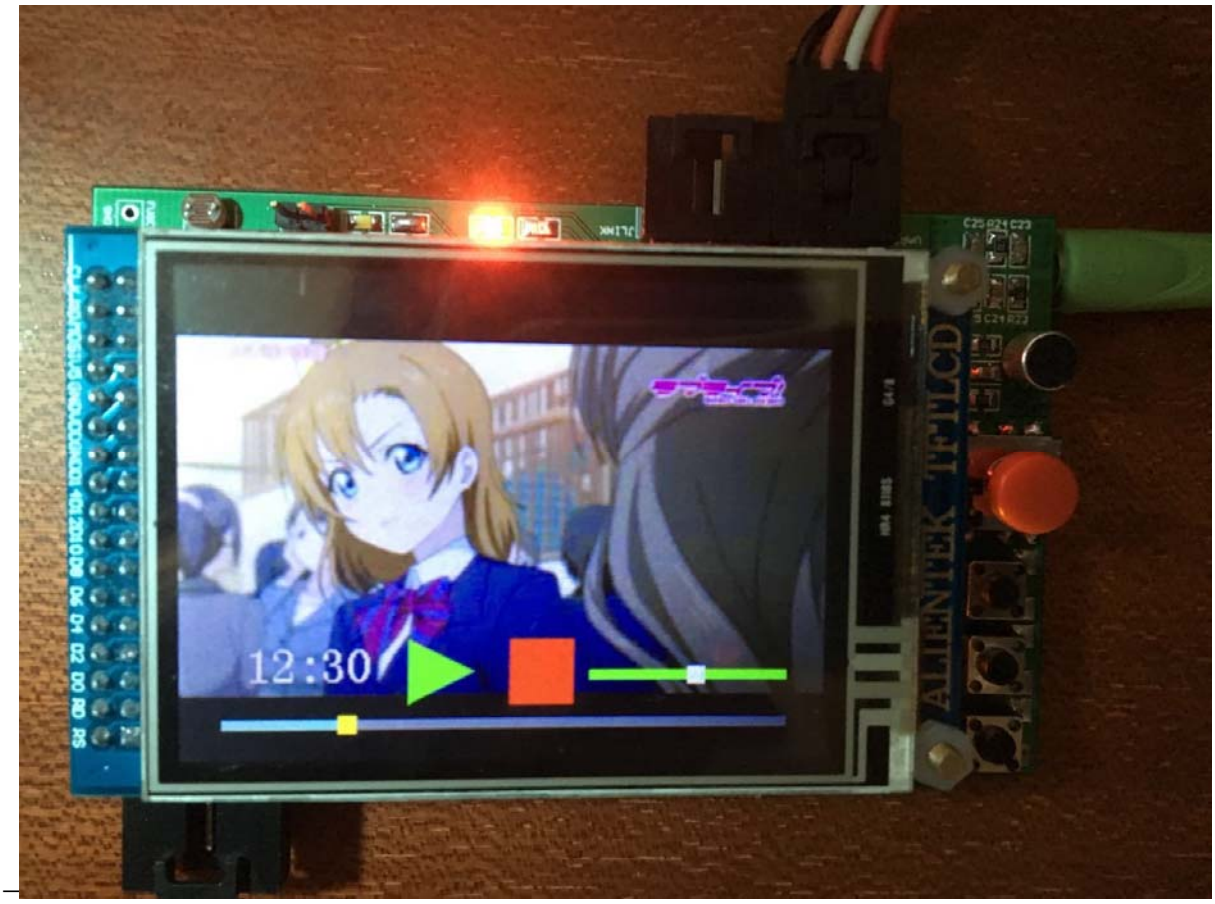
- Move in four directions with wheels (forward, backward, turn left, turn right)
- Controlled by a infrered remote control
- Move freely without any delay
-

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 point

| | |
|---|---|
| Group Number | 21 |
| Project Title | touchFrame |
| Name of Student 1 | LEE Wing Hang |
| Name of Student 2 | PEH Yin Shan |

Please attach ONE photo of your project here




Please list the functions of your project in point form

- Using STM32F407 series MCU for better performance
- Hardware implemented on a self-designed PCB board, for a layout improvement
- 2.8” LCD display with resistance touch sensor
- SD card slot for multi-media file storage (support FAT-16/32 file system, up to 128 GB, class 1 UHS)
- LDR sensor for LCD auto brightness adjusting
- VS1053b Audio decoder IC (With 3.5mm audio jack and microphone)
- Graphical user interface (with both touch and button control interface support)
- File finder: View your file/folder inside your SD card
- Image explorer: Show image on LCD. Support only non-progressive, non-interlace JPEG.
- Music player: Play MP3/WAV format music file, limited support for AAC/WMA/OGG
- Video player: Support AVI container format video playback on LCD (with MJPEG codec for video, MP3 codec for audio)
- Optimized decoding algorithm (e.g.: Fast Huffman coding, Inverse Fast Cosine Transform), for fast and smooth video playback but still keep efficient memory usage.

# ELEC 3300 Project Summary Sheet

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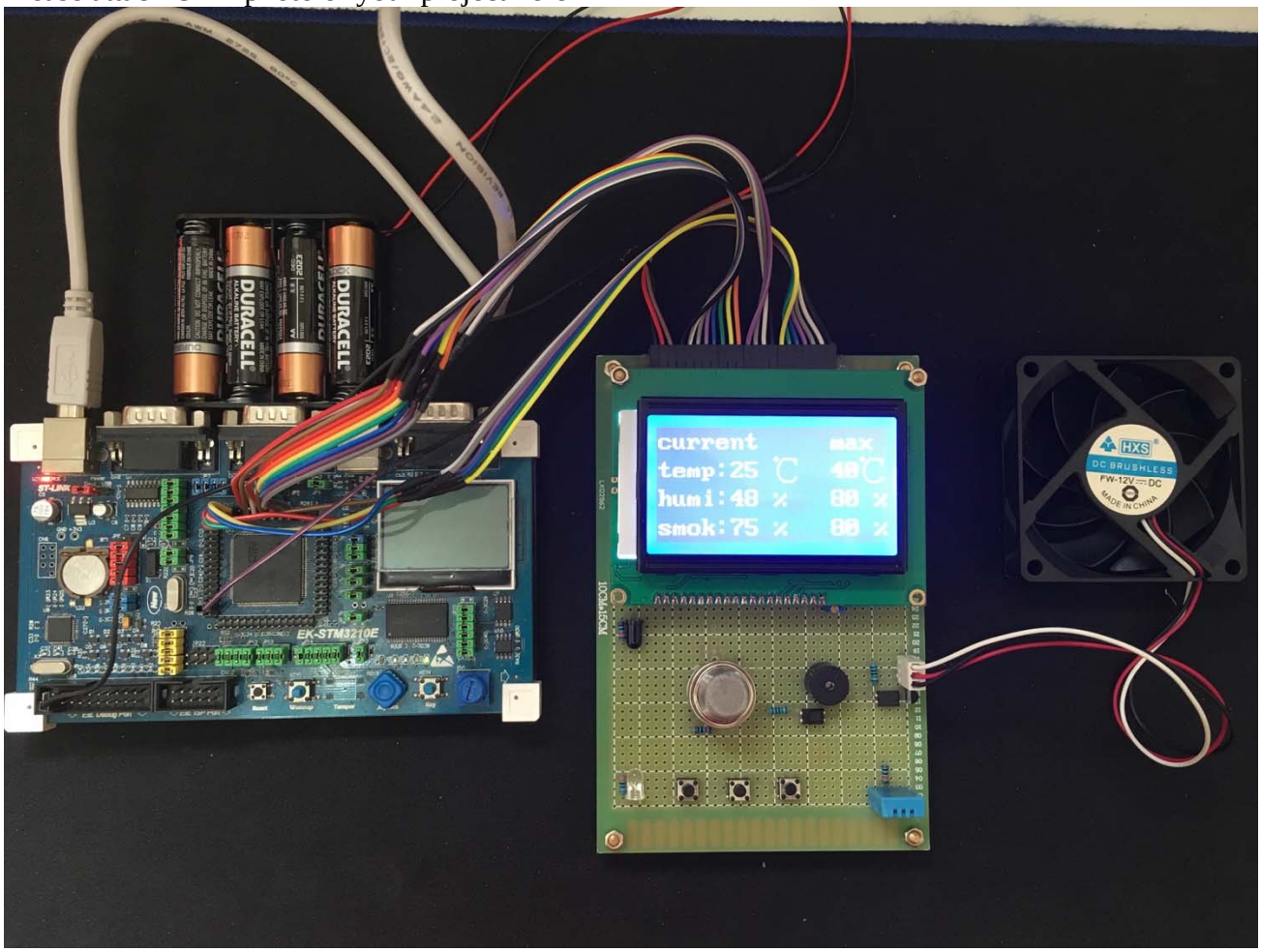
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 22 |
| Project Title | iGreenhouse |
| Name of Student 1 | KWOK Kin Pui |
| Name of Student 2 | YEUNG Pak Hei Amen |

Please attach ONE photo of your project here




Please list the functions of your project in point form

- STM32 is programmed to control all following features.
- Parameters are detected by sensors and processed by STM32
- Temperature & Humidity Sensor: DHT11; Gas Sensor:MQ2
- Regular range of parameters can be adjusted by buttons
- If parameters are out of range, output will be triggered to regulate back
- Parameters output: Ventilation Fan and alarm
- The LCD Monitor 12864 displays every parameters and the condition with unit
- Anti-thief system: 5mm infrared led IR533C

# ELEC 3300 Project Summary Sheet

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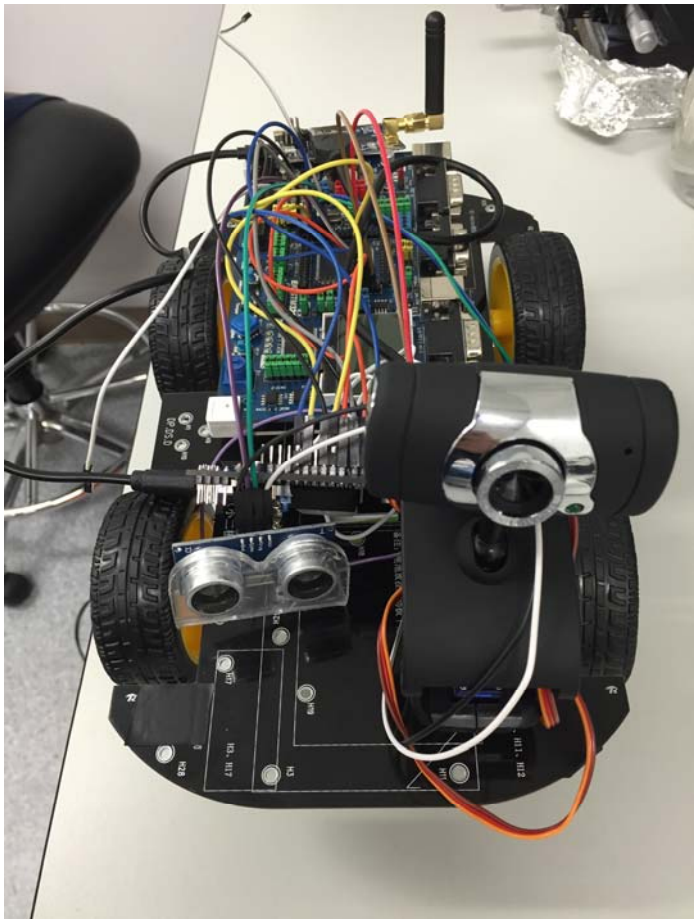
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 23 |
| Project Title | Remote Control Smart Car |
| Name of Student 1 | Lin Tianye |
| Name of Student 2 | ZENG Cancheng |

Please attach ONE photo of your project here



Please list the functions of your project in point form

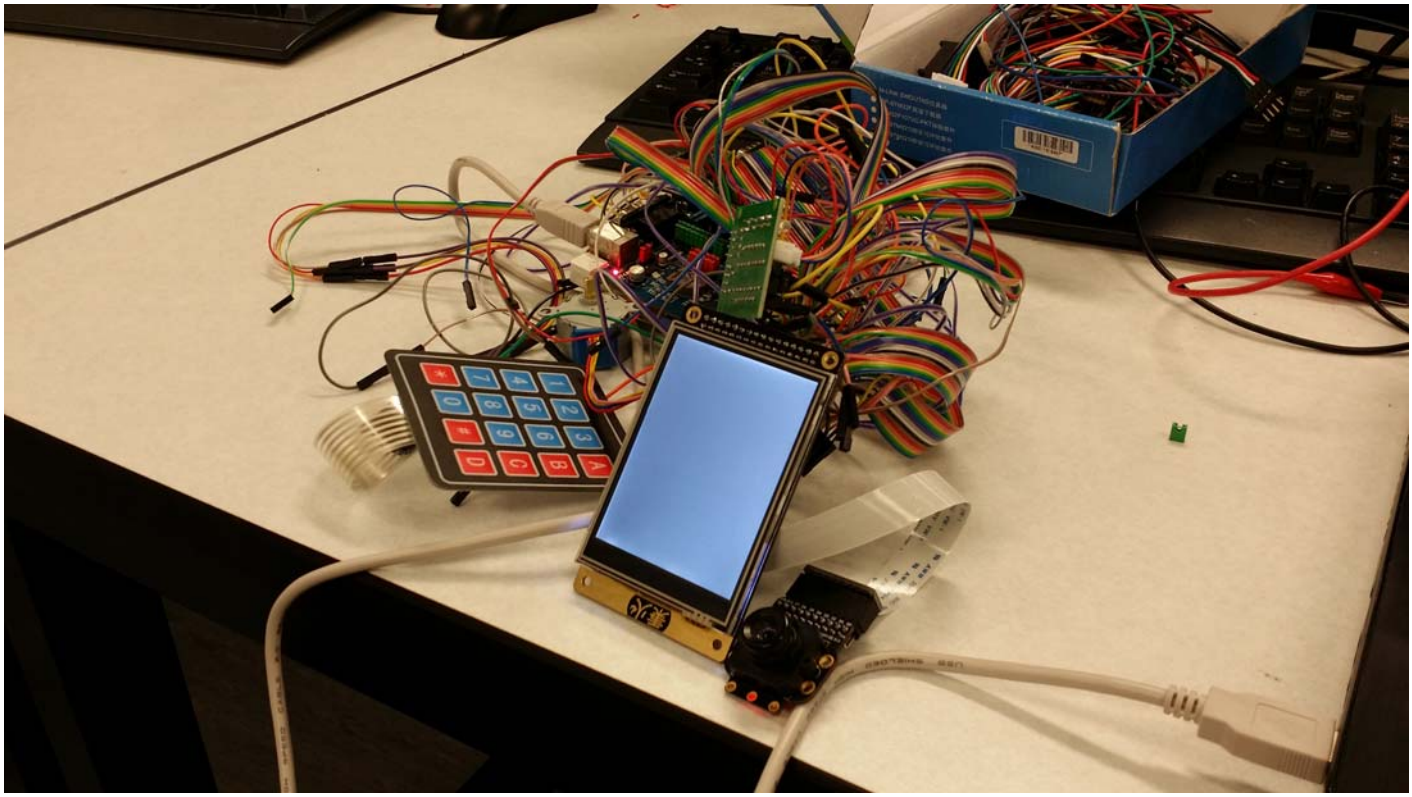
- The movement of the car is controlled by 4 wheels powered by DC motors
- A motor driver L298 and two 74HC244 is used here to drive the motors,
- The attitude of the camera is controlled by two servo motors, the servo motors are directly controlled by PWM signals of the STM32
- The speed of the wheels and the camera attitude are remotely controlled by PC, smartphones or VR devices through WIFI communication
- An Ultrasonic Ranging Module is used to detect obstacles
- The camera video stream is transmitted to the PC/Smartphone/VR device in real-time

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 24 |
| Project Title | Smart Door Lock |
| Name of Student 1 | Hee Namkung |
| Name of Student 2 | Wai Ho Sin |

Please attach ONE photo of your project here



Please list the functions of your project in point form

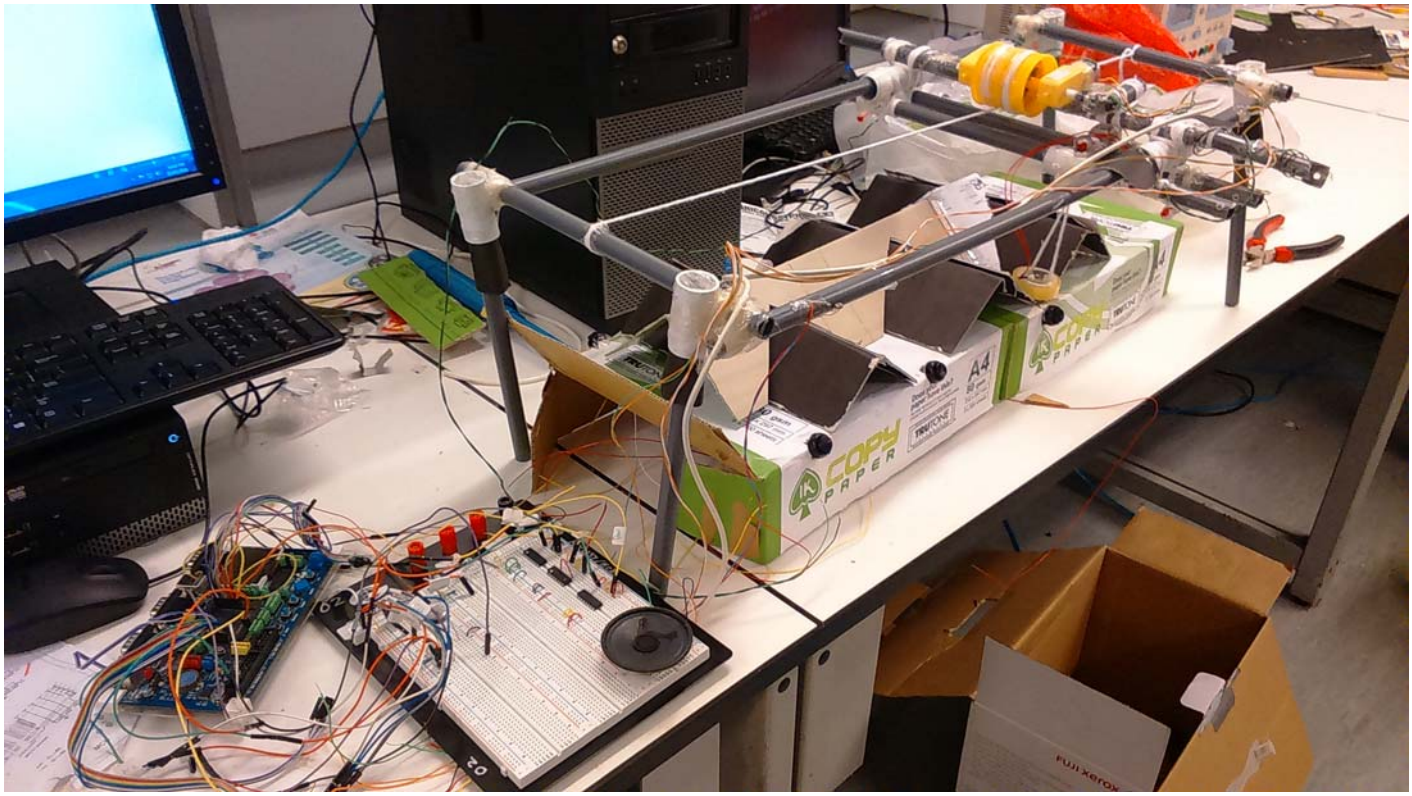
- LCD display to display any information.
- Setting up the password for initial startup.
- Opening the door lock when entering correct password.
- In case of multiple password errors, photo of the intruder will be taken.
- Photo is stored on the SD card.
- After entering the correct password, user may change the password with ease.

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 25 |
| Project Title | **Backgammon for the Physically impaired** |
| Name of Student 1 | Yeung Ming Chuen |
| Name of Student 2 | Ho Hei Man |

Please attach ONE photo of your project here




Please list the functions of your project in point form

- A system that help people who have physical impaired to have real board gaming with tangible dice and chesses
    - The robotic arm helps people with weak muscle such as spinal muscular atrophy patient
    - Colored-Dice system make this game suitable for the blinds
- The controller sense the painted dice through a color sensor and transform the signal into dice point
- A robotic arm move the chesses according to the dice points
    - Count the movement of the trolley by a rotary encoder
    - Used 2 light dependent resistors to sense the position of the trolley
    - Placed a servo motor cooperate with a electromagnet to pick up the chesses
- A buzzer is placed to help the players following the game flow
- The controller can monitor the whole game operation, alert the player when invalid step is taken

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 26 |
| Project Title | Smart robot car |
| Name of Student 1 | CHOW CHUNG MAN |
| Name of Student 2 | CHUI Man Kai |

Please attach ONE photo of your project here

Please list the functions of your project in point form

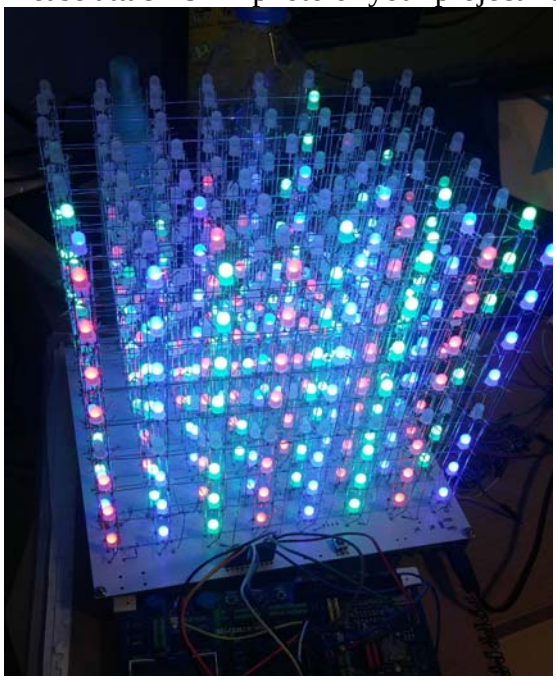
- The robot car can follow the instruction ordered by the computer, for example, move forward, backward and also turn left or right
- The camera installed on the car will transmit real time image on the computer.
- User will be able to control the car by computer.

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

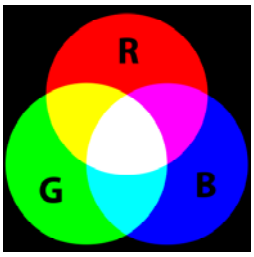
| | |
|---|---|
| Group Number | 27 |
| Project Title | RGB 8*8*8 LED cube |
| Name of Student 1 | Yuen Shun Fung |
| Name of Student 2 | Li Chi Chun |

Please attach ONE photo of your project here



Please list the functions of your project in point form

- Display words, pictures and 3D animations with 7 colors included red, green, blue, yellow, purple, cyan and white
- Able to control the light intensity
- Display music spectrum
- 3D Greedy Snake game
- Control by an infrared controller

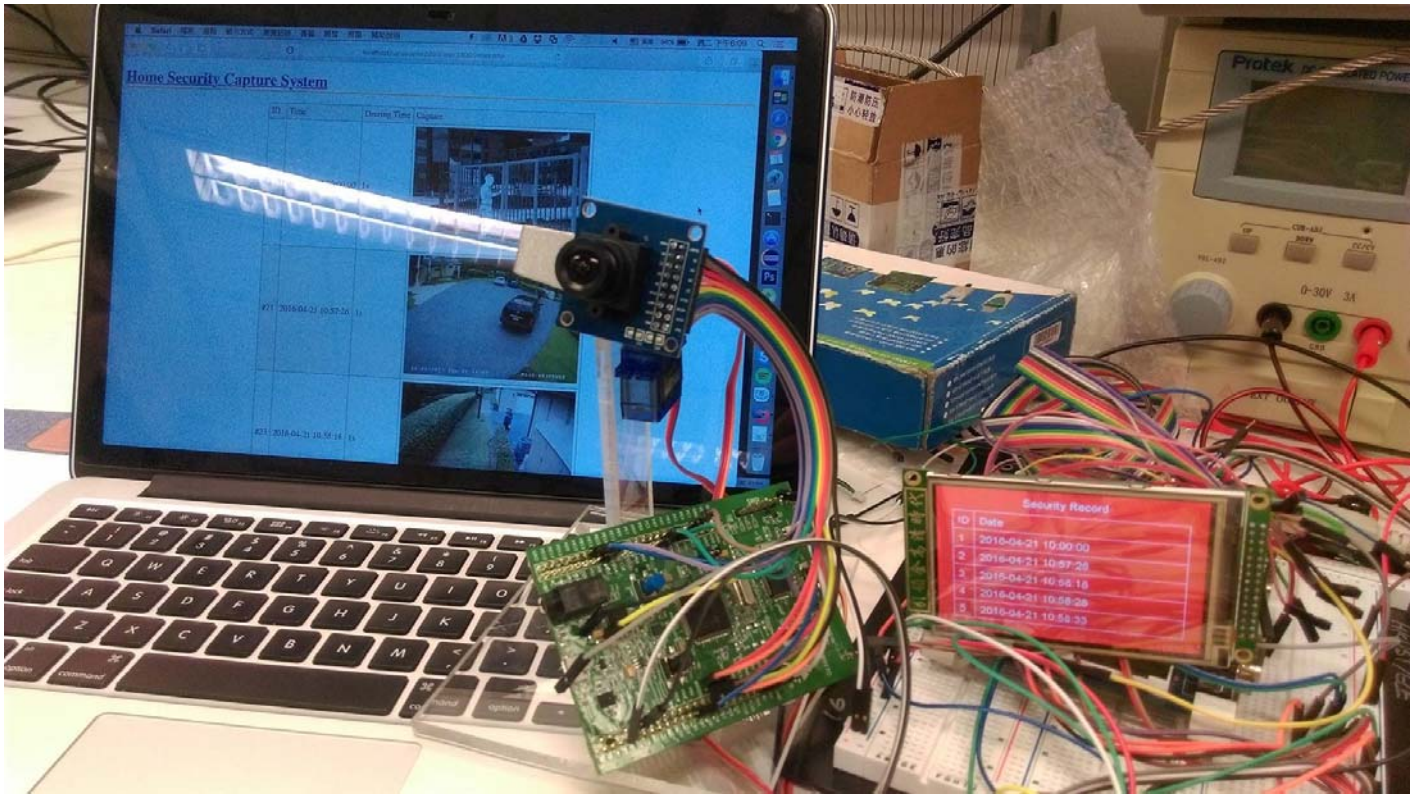


# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 28 |
| Project Title | Camera Security System |
| Name of Student 1 | Leung Wa Lok |
| Name of Student 2 | Chau Tsz Ho |

Please attach ONE photo of your project here




Please list the functions of your project in point form

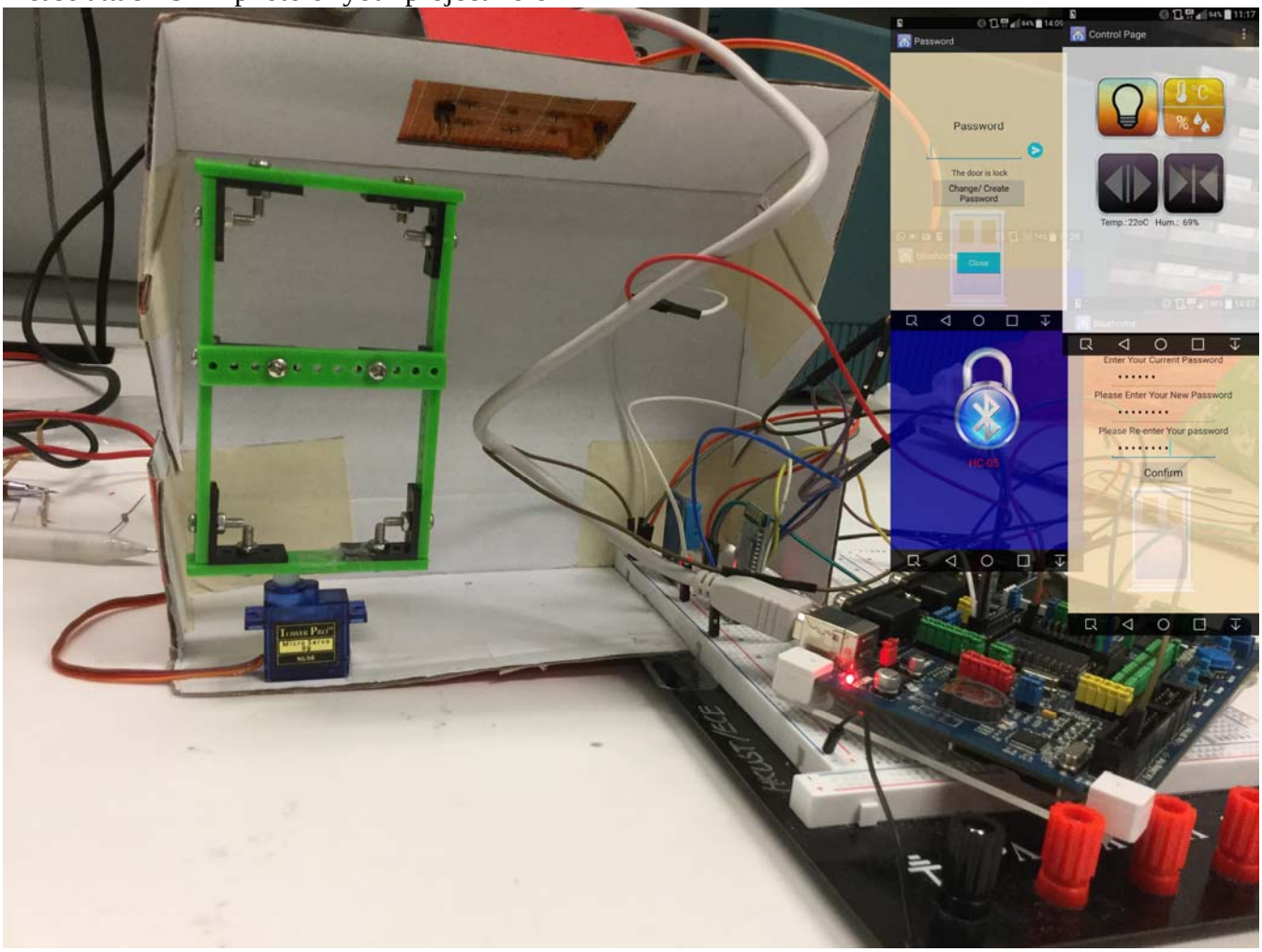
- Photo Capture when someone passes though
- Online System using WiFi and database
- The photo will save in the SD card and upload to database
- Remotable 2dof stand
- LCD display the record from SD card or database
- Remote the stand by mobile apps or website

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 29 |
| Project Title | BlueHome (ASmart home model) |
| Name of Student 1 | Li Ho Cheung |
| Name of Student 2 | Cheng Yue Ting |

Please attach ONE photo of your project here




Please list the functions of your project in point form

- Control the following home appliance through mobile app via Bluetooth
  - Door lock (Servo)
  - Luminance of the LED
  - Obtain the humidity and temperature in the house
- User can select the corresponding Bluetooth module in order to control
- User can change password in the mobile app
- Access the control page after successfully enter the password
- Command send from the smartphone will display on the embedded LCD
- Door lock can be opened and closed by different control command sent from the application
- Three luminance levels can be adjusted through using the app
- Humidity and temperature will be displayed  after receive the corresponding command

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 30 |
| Project Title | |
| Name of Student 1 | |
| Name of Student 2 | |

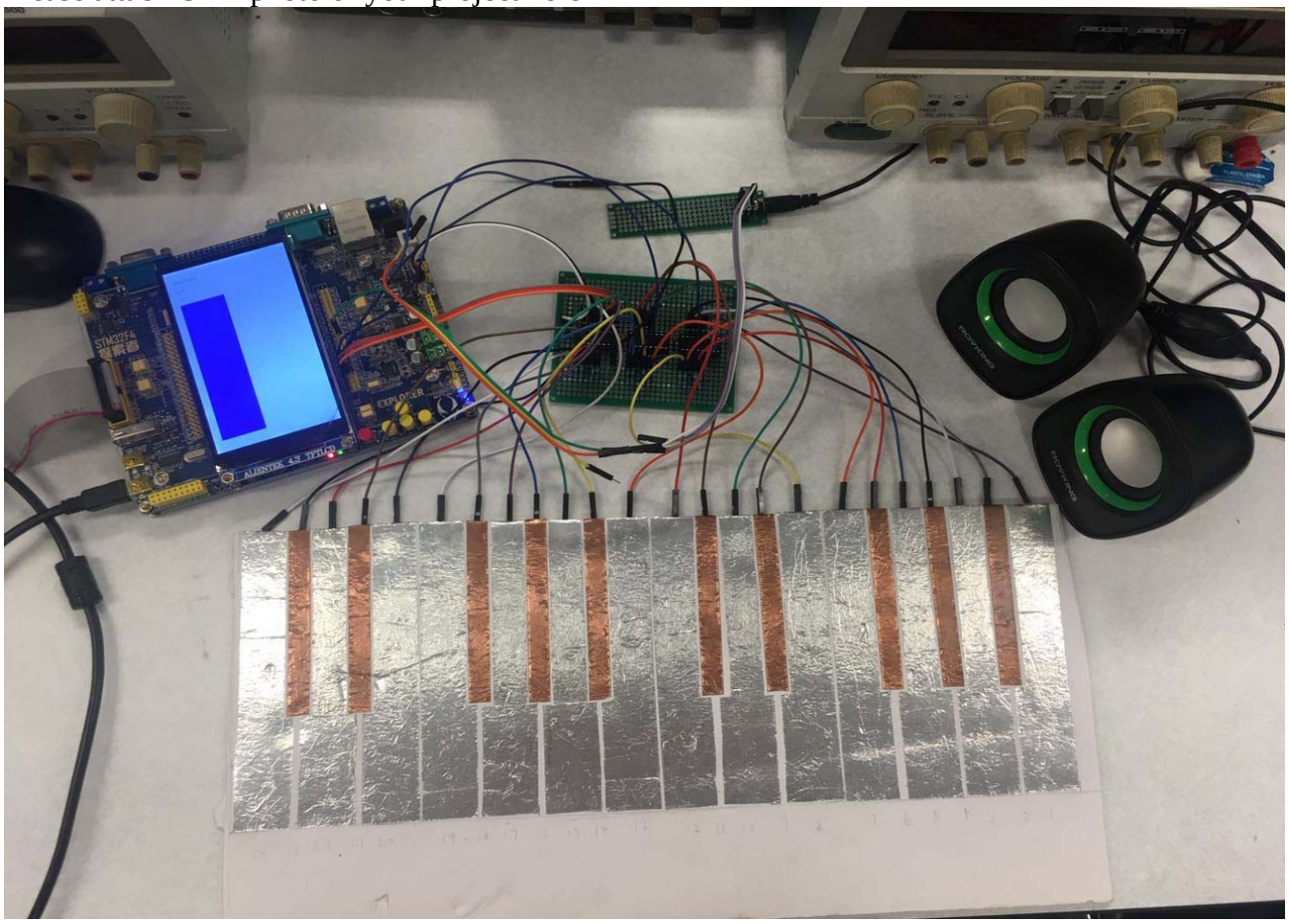
Please attach ONE photo of your project here

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 31 |
| Project Title | Capacitive Touch Piano |
| Name of Student 1 | YU Chendi |
| Name of Student 2 | Dai Yangyang |

Please attach ONE photo of your project here



Please list the functions of your project in point form

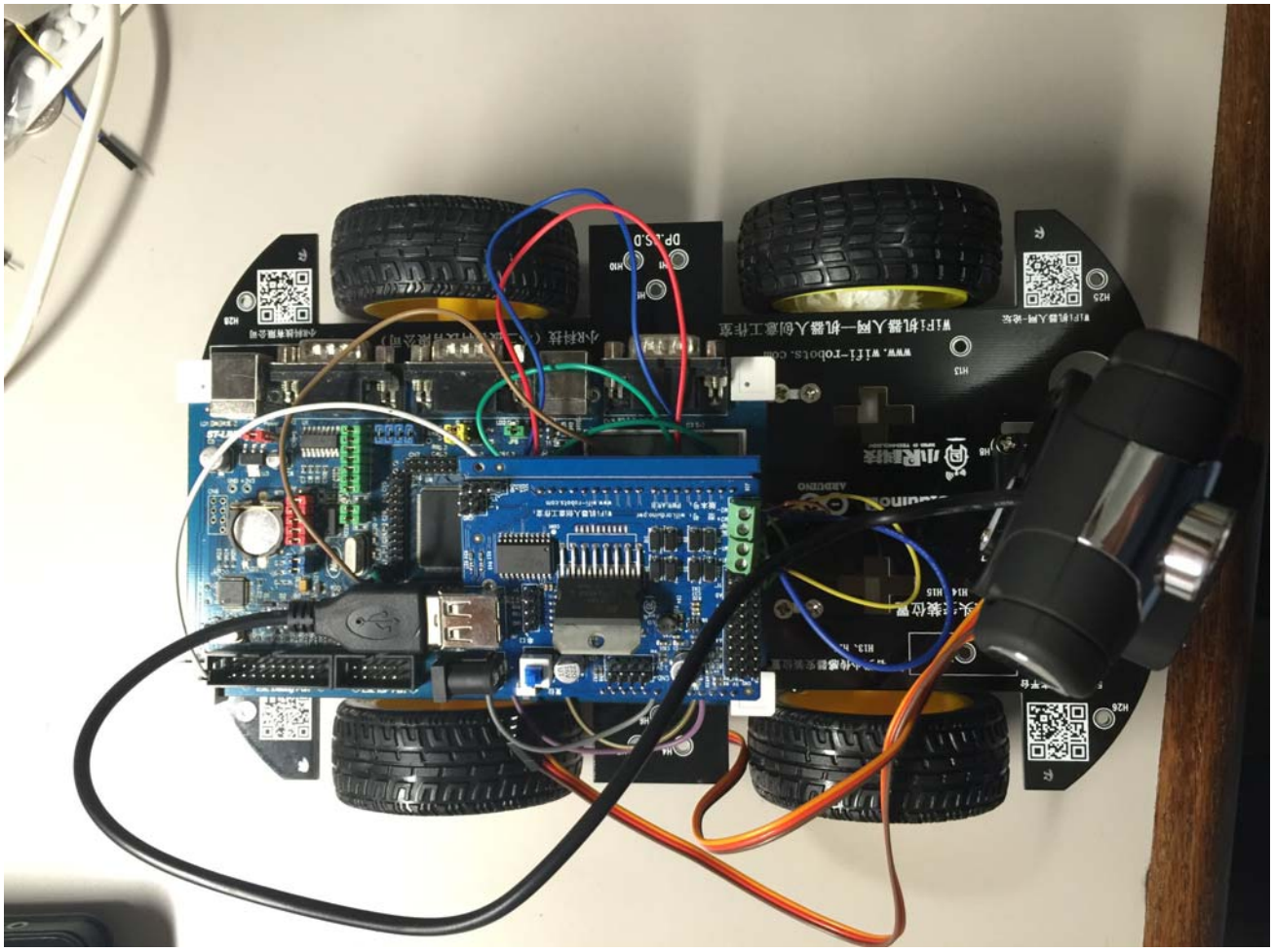
- Self-made capacitive touch keyboard
- Generate sound using Karplus-Strong algorithm
- Up to 3 keys at the same time , producing piano chords
- Outputs sound using DAC, supports standard 3.5mm audio socket
- Three sound timbres to choose from
- Play 8-bit mono/dual channel WAV file from SD card

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 32 |
| Project Title | Smart Phone Enabled Tracking Car |
| Name of Student 1 | YU XINYUAN |
| Name of Student 2 | WU AOYU |

Please attach ONE photo of your project here



Please list the functions of your project in point form

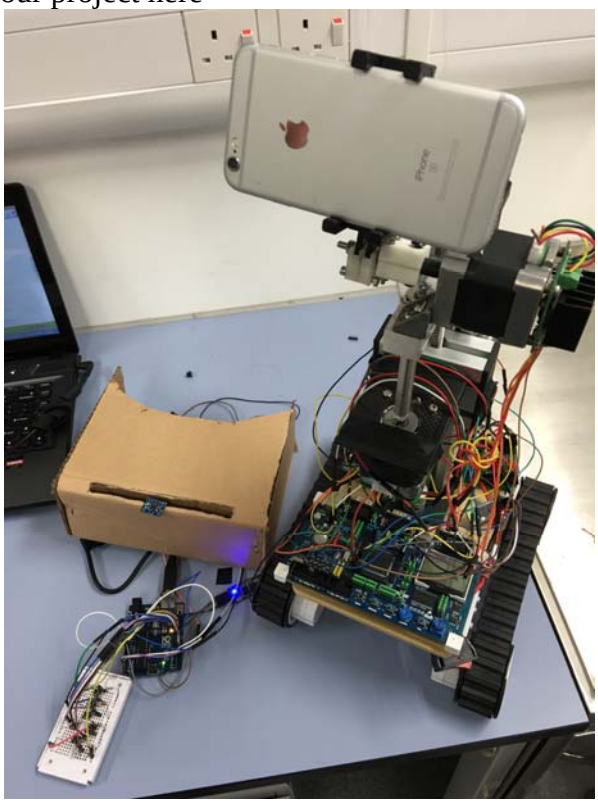
- The car can be remotely controlled via Android Phone.
- The car can detect certain categories of object and track such objects.
- The car can avoid obstacle once the mode is open.

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 33 |
| Project Title | Clairvoyance |
| Name of Student 1 | CHEN Liqi |
| Name of Student 2 | SHANG Hang |

Please attach ONE photo of your project here



Please list the functions of your project in point form

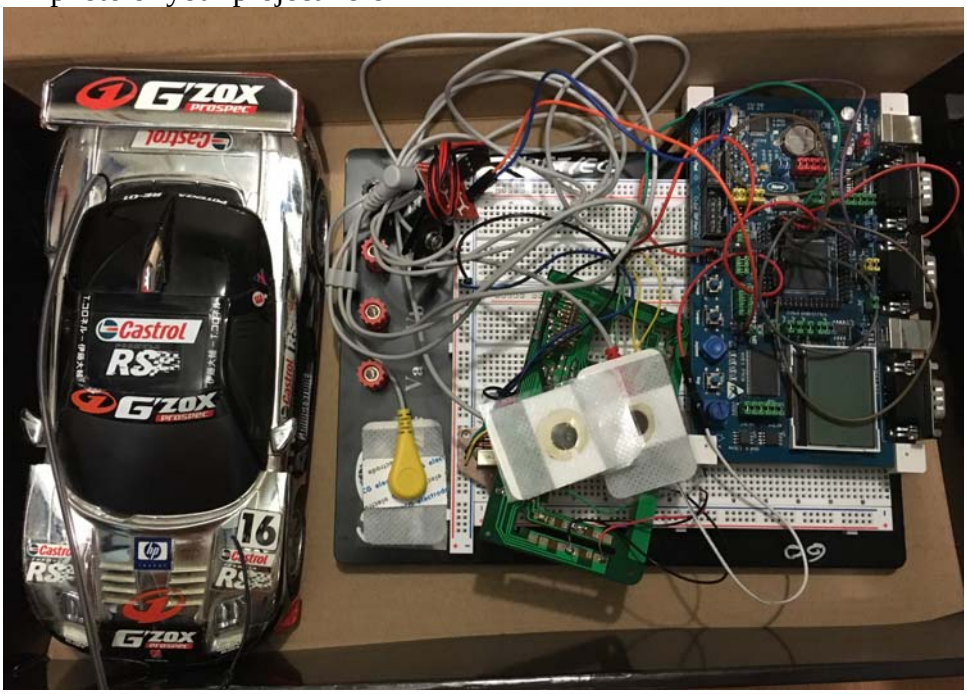
- The RoboCar is controlled remotely. The movement is controlled by a controller in user's hands, and the camera holder's rotating angles (in pitch and yaw) followed exactly the same angles of user's head movement in real time.
- The video streaming is achieved by the cameras equipped on 2 mobile phones.
- User will wear a pair of quasi-VR glasses (with Gyro on it) and enjoy what the RoboCar sees from its perspective.
- Additional functions: In dim environment, it can give out supplementary lighting by lighting up the bulb in the front of car. And it can whistle if someone blocks its way.
- For practical use, this project can help people explore some places that may cause risk and danger.

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet; Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 34 |
| Project Title | Muscle Control Car |
| Name of Student 1 | Chan Pak Ho Leo |
| Name of Student 2 | |

Please attach ONE photo of your project here




Please list the functions of your project in point form

- With the muscle sensor, the user can command the remote control car to move
- Muscle sensor: stick it on forearms, left hand side control forward or backward directions and right hand side control the turning action.
- Clenched the left fists in different strength would control the car to move in different speed.
- The connection between the controller and the car is using FM 27MHz.
- Using STM32 to manage the signal of the muscle sensor to the transmitter.

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 35 |
| Project Title | Wearable Mouse |
| Name of Student 1 | Man Hei Cheung |
| Name of Student 2 | Siu Hoi Kit |

Please attach ONE photo of your project here

Please list the functions of your project in point form

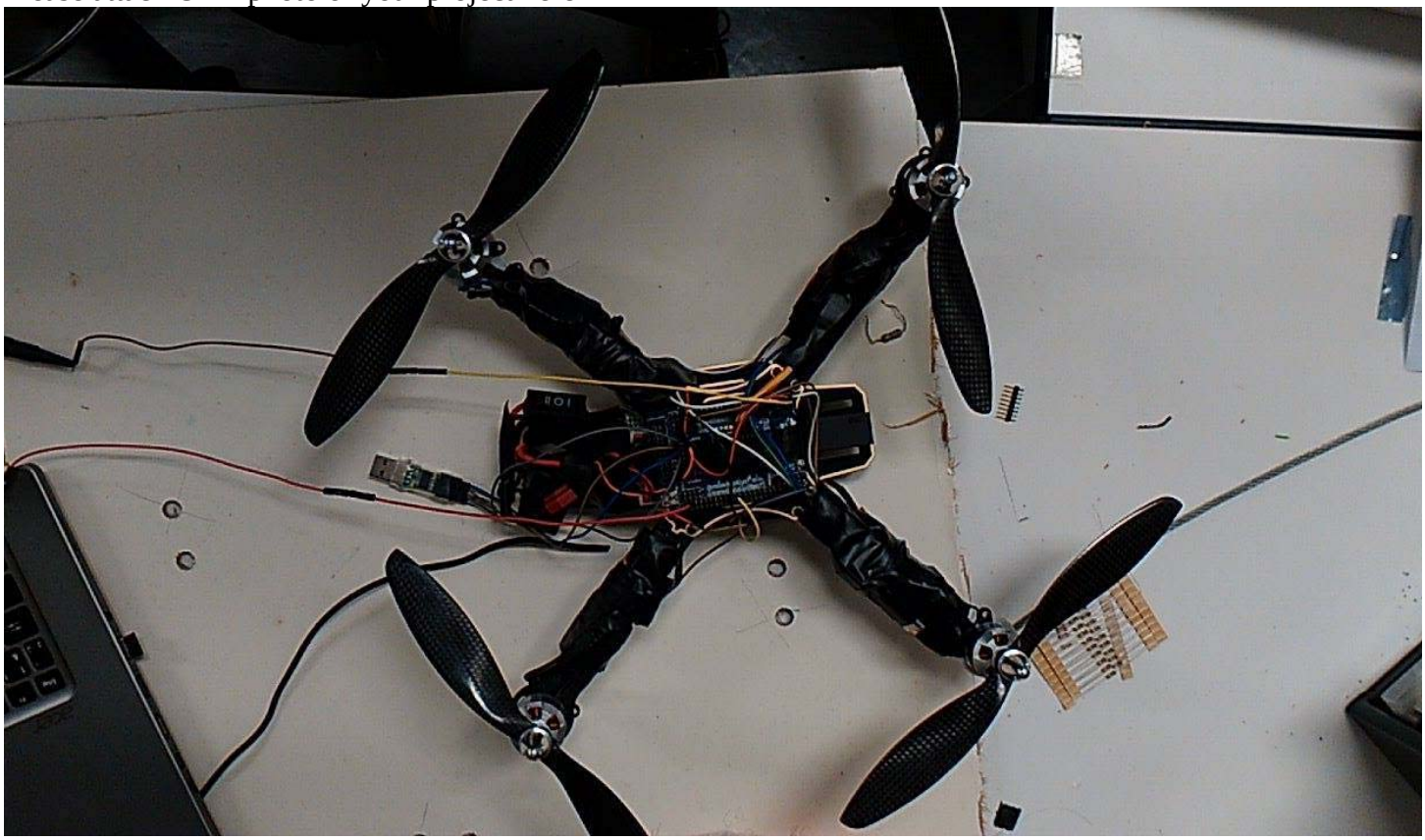
- This is a wearable device which simulates the function of the mouse.
- There are two TCRT5000 sensors on the index finger and the middle finger respectively. TCRT5000 is a reflective optical sensor which can track the “up and down” movement of the fingers. This acts like clicking the button on the mouse.
- There is an MPU6050 sensor at the back of the hand. MPU6050 is a accelerometer which record the status of the hand and control the cursor.
- The LCD screen on STM32 will be used to show the simulation result.

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 36 |
| Project Title | Quadcopter |
| Name of Student 1 | AHMED, Ben Ayed |
| Name of Student 2 | BUDHRANI, Ravish |

Please attach ONE photo of your project here



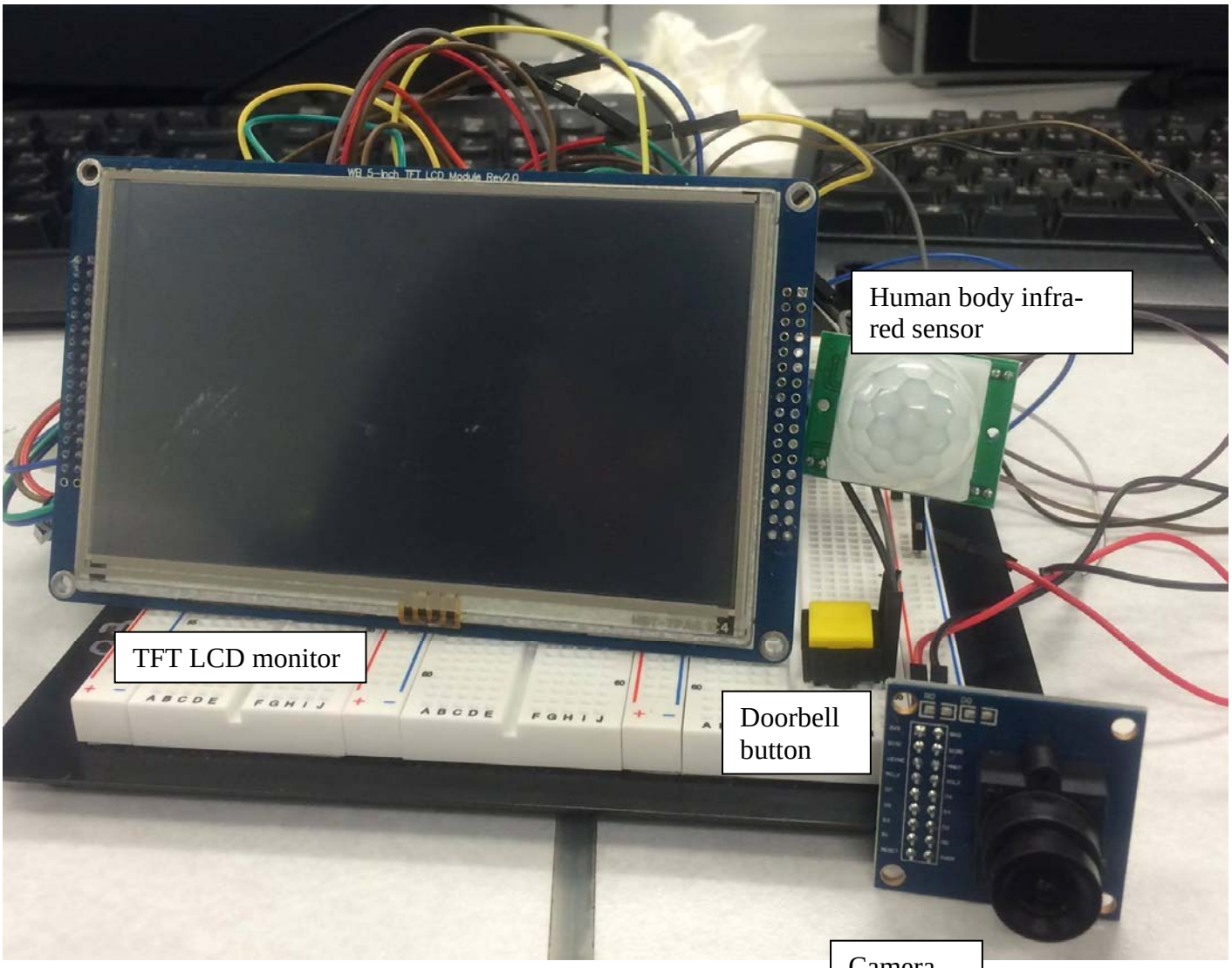
Please list the functions of your project in point form

- Stabilizes in the air using feedback control
- Gyroscope and accelerometer read angles to stabilize quadcopter
  - This is done by calculating roll and pitch
- Quadcopter moves up and down
  - This is done by controlling the duty cycle of the PWM to the motors
- Quadcopter controlled by Bluetooth (through an app)
- Quadcopter can carry payload of certain weight (to be determined)
- Quadcopter can roll and pitch
  - This can be done by setting an angle on the x or y plane, through the Bluetooth controller and using feedback from the sensors to keep it at that value
- Main Application: Track the elderly in their old age homes (e.g. parks, open areas)
  - The drone will be able to track their ID cards (given to them by the old age home)

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 37 |
| Project Title | Integrated Doorbell System for Deaf |
| Name of Student 1 | Chan Wing Ka, Jessica |
| Name of Student 2 | Chan Ming Yan |




Please attach ONE photo of your project here

Please list the functions of your project in point form

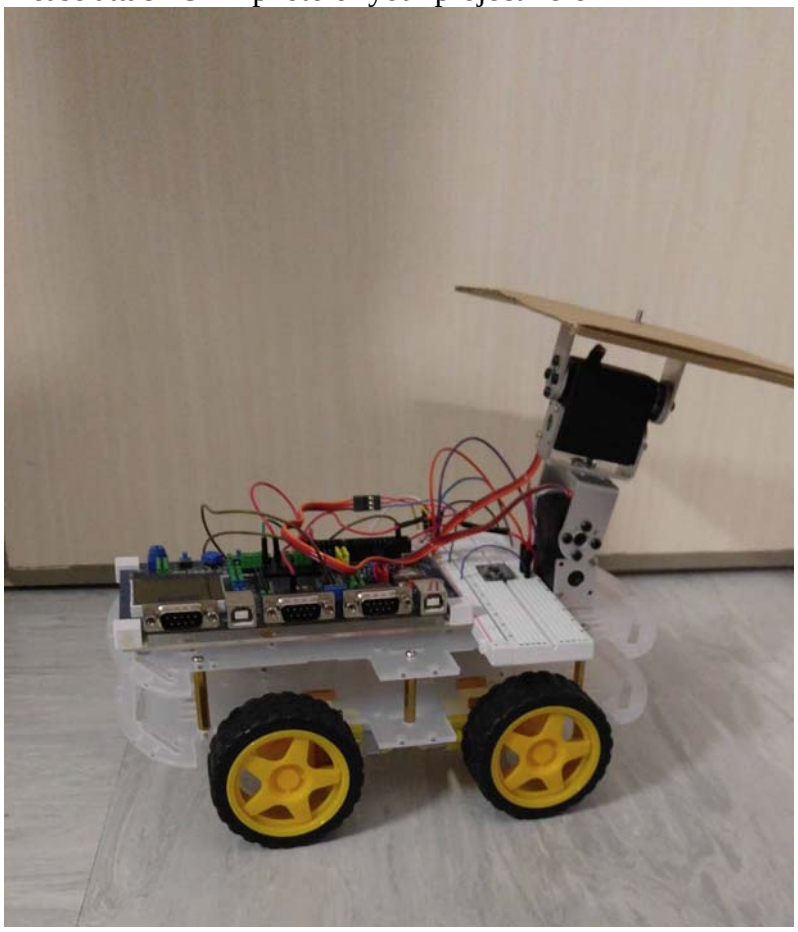
- Photo taking triggered in two modes:
  - 1. Press of doorbell button
  - 2. Human passing by will be detected by the human body infra-red sensor
- The capture images will send to the SD card and the TFT LCD monitor.
- Addition function of light flashing aids the deaf to notice the visitor.

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 38 |
| Project Title | Tumbler - Self-balance moving platform |
| Name of Student 1 | LAM, Kei Ting |
| Name of Student 2 | CHEUNG, Tak Hon |

Please attach ONE photo of your project here

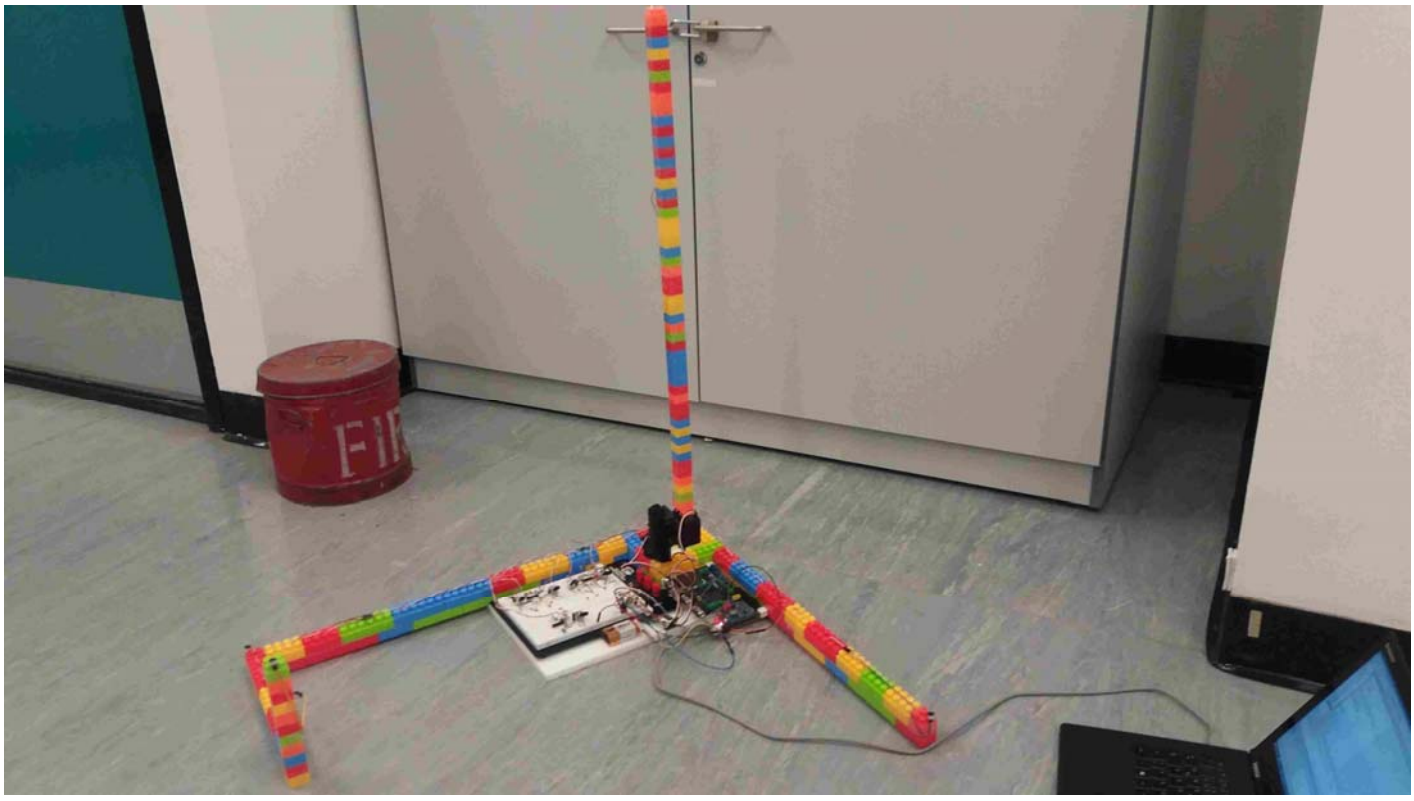


Please list the functions of your project in point form

- Controllable vehicle
- Able to move along incline slope
- The platform can adjust the level itself
- Loads carrying ability
- It can transport fragile loads with care

# ELEC 3300 Project Summary Sheet

| | |
|---|---|
| Group Number | 39 |
| Project Title | The Librassassin |
| Name of Student 1 | Kuan-Fu Liu |
| Name of Student 2 | Benjamin Sellak |



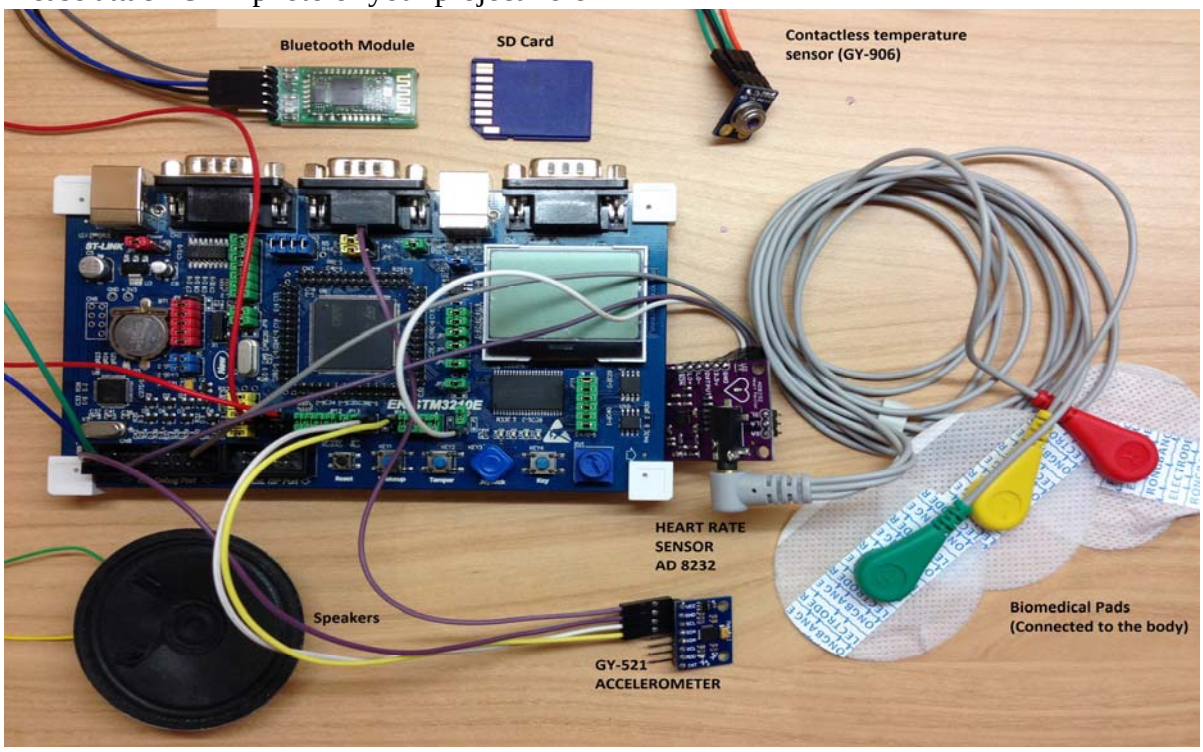
- The microcontroller constantly samples the output of five microphones which are set up in short distances away from the controller.
- If excessive noise is detected by the microcontroller, it stops sampling and utilizes a TDOA algorithm to determine the location of the loud noise from the microphones' coordinates and the buffered samples.
- The µC controls two servomotors via PWM to point a small toy gun at the source of the loud noise and a third one to pull the trigger.
- The LCD then displays a random message of a selection of witty 80's action hero one-liners.
- To continue, you have to reload the gun manually, and push a button. The µC again starts sampling and staying alert.

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 40 |
| Project Title | BodyGuardian |
| Name of Student 1 | Jainam Bharatkumar Mehta |
| Name of Student 2 | Shrey Singh |

Please attach ONE photo of your project here




Please list the functions of your project in point form

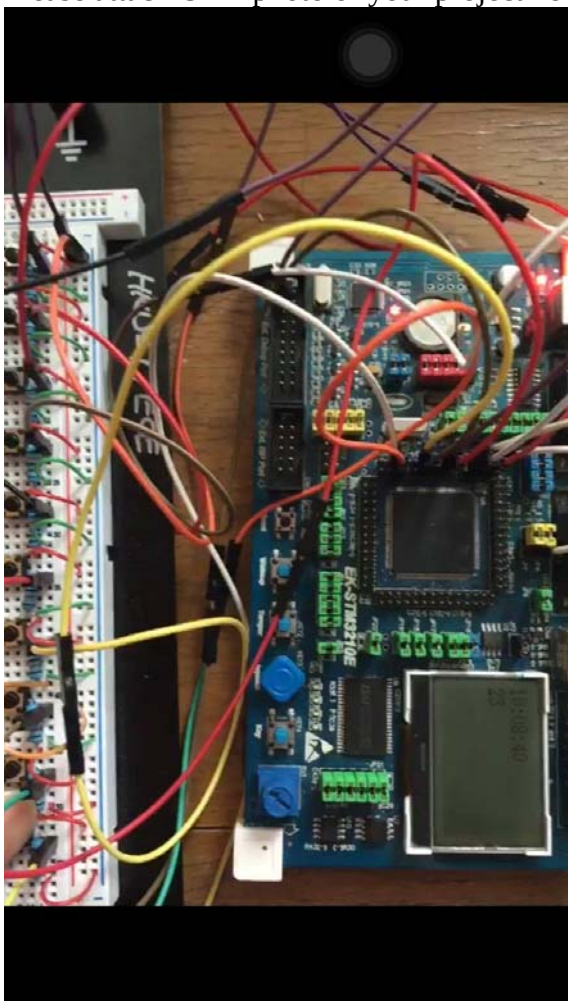
- **Measure posture using a dual axis accelerometer (GY-521)**. Display output on the STM's LCD and issue an audible warning (through a speaker) and a visual warning (illuminated LED). Will also store the total amount of time spent in a bad posture which will be transmitted via Bluetooth (UART) to any Bluetooth enabled device (collecting historical healthcare data).
- **Measure heart-rate using an AD8232 analog heart rate sensor.** The analog signal received from the sensor is compared against a threshold voltage (2.0 Volts represents a heart-beat) and then converted to a digital signal using ADC conversion. The beats per minute value is displayed on the LCD and is calculated by counting the number of heartbeats within a set timeframe. An escalated heart-rate will obviously trigger an audible and visual warning.
- **Measure ambient and body temperature using a contactless temperature sensor (GY-906) using SMBus Protocol.** The contactless temperature readings makes it non-intrusive and easy to use. We will be displaying both ambient and body temperature on the STM's LCD. It will issue a warning via an illuminated LED and an audible warning (through a speaker) if the ambient or body temperature is too high.
- **Additional functionalities such as Bluetooth transmission of healthcare data and powering off warnings are also included.** Upon pressing the wakeup button, all the data such as posture, heart-rate, and temperature readings can be transmitted to any Bluetooth device. The data will also be stored in a SD card. Lastly, the user can press a button on the STM to switch off the warnings.

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 41 |
| Project Title | Real Lift Advisor |
| Name of Student 1 | Che Wing Wai |
| Name of Student 2 | Chim Ki Lap |

Please attach ONE photo of your project here



Please list the functions of your project in point form

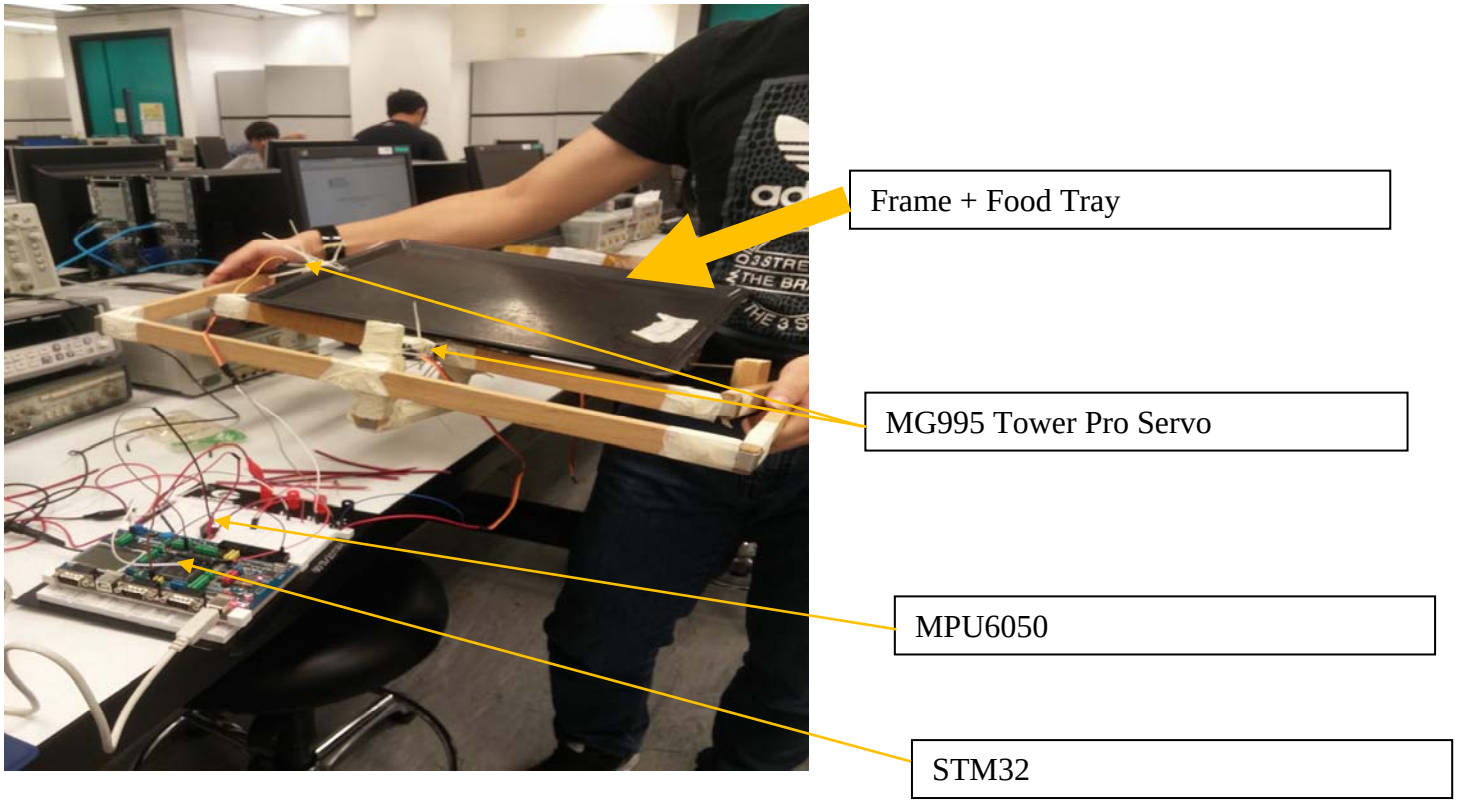
- Enter the classroom number by pressing 0-9 buttons, retunes the nearest lift's number and for the required classroom and shown on LCD.
- The real time clock is also shown on LCD

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 42 |
| Project Title | Electronically Stabilized Food Tray |
| Name of Student 1 | Chu Nicholas Chuk Kei |
| Name of Student 2 | Lee Cheuk Yu Joshua |

Please attach ONE photo of your project here




Please list the functions of your project in point form

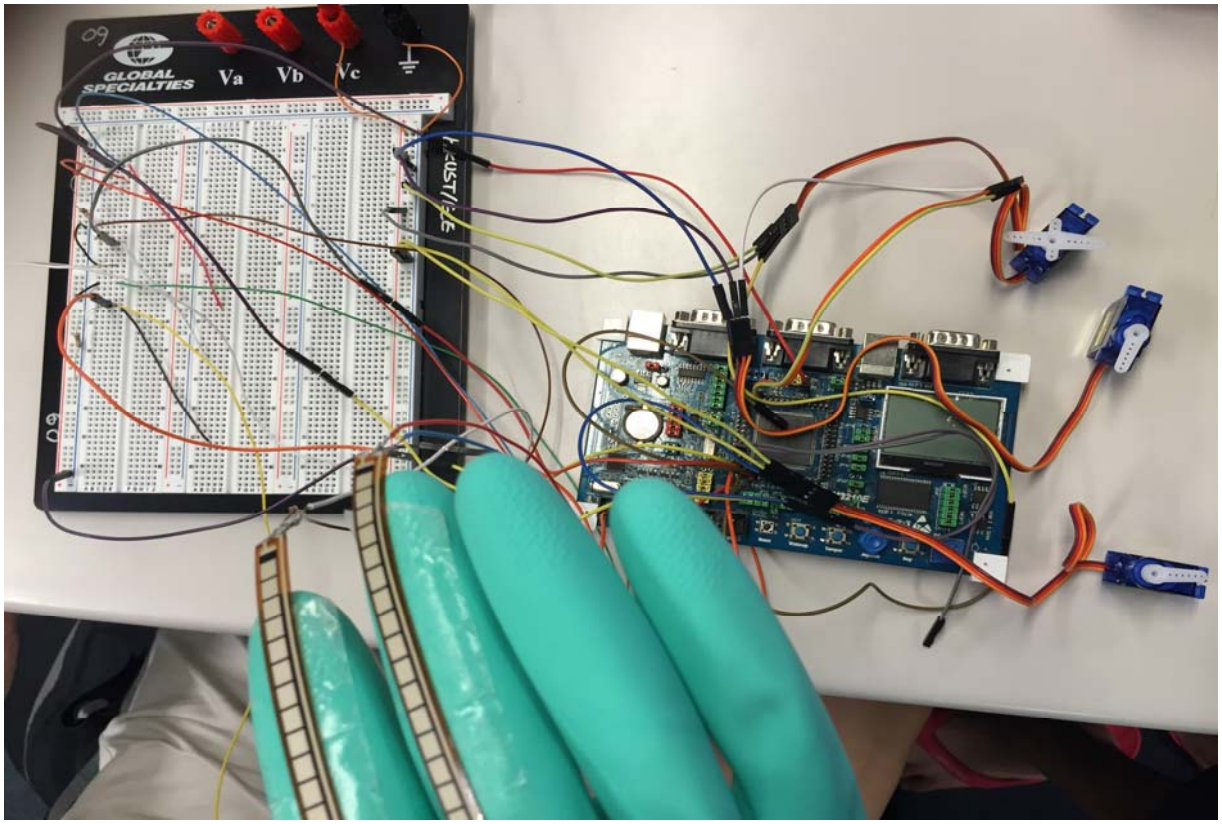
- Microcontroller (STM32): To process the input information given by the gyroscopes and accelerometer from MPU6050, calculate and adjust the errors caused by drift, output a command signal to the 2 servo motors
- Gyroscope (MPU6050): To send signal to the STM32 as input, obtain angular position of the tray
- Servo Motors: To provide controlled movement from outputted signal from stm32
- Designed for elderly or disabled people to carry food/objects despite any erratic movements by maintaining the tray with surface level.
- Using the position calculated and sensed by MPU6050, a PWM signal was sent to two servo motors in order to obtain desirable surface level.
- Servo motors are driven by a D.C. power supplier
- Frame consists of two separate frames to provide 2 axis of stabilization (Pitch and Roll)

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet, Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 43 |
| Project Title | Finger controlled robotic arm |
| Name of Student 1 | Wong Kim |
| Name of Student 2 | Wong Kwun Sing |

Please attach ONE photo of your project here




Please list the functions of your project in point form

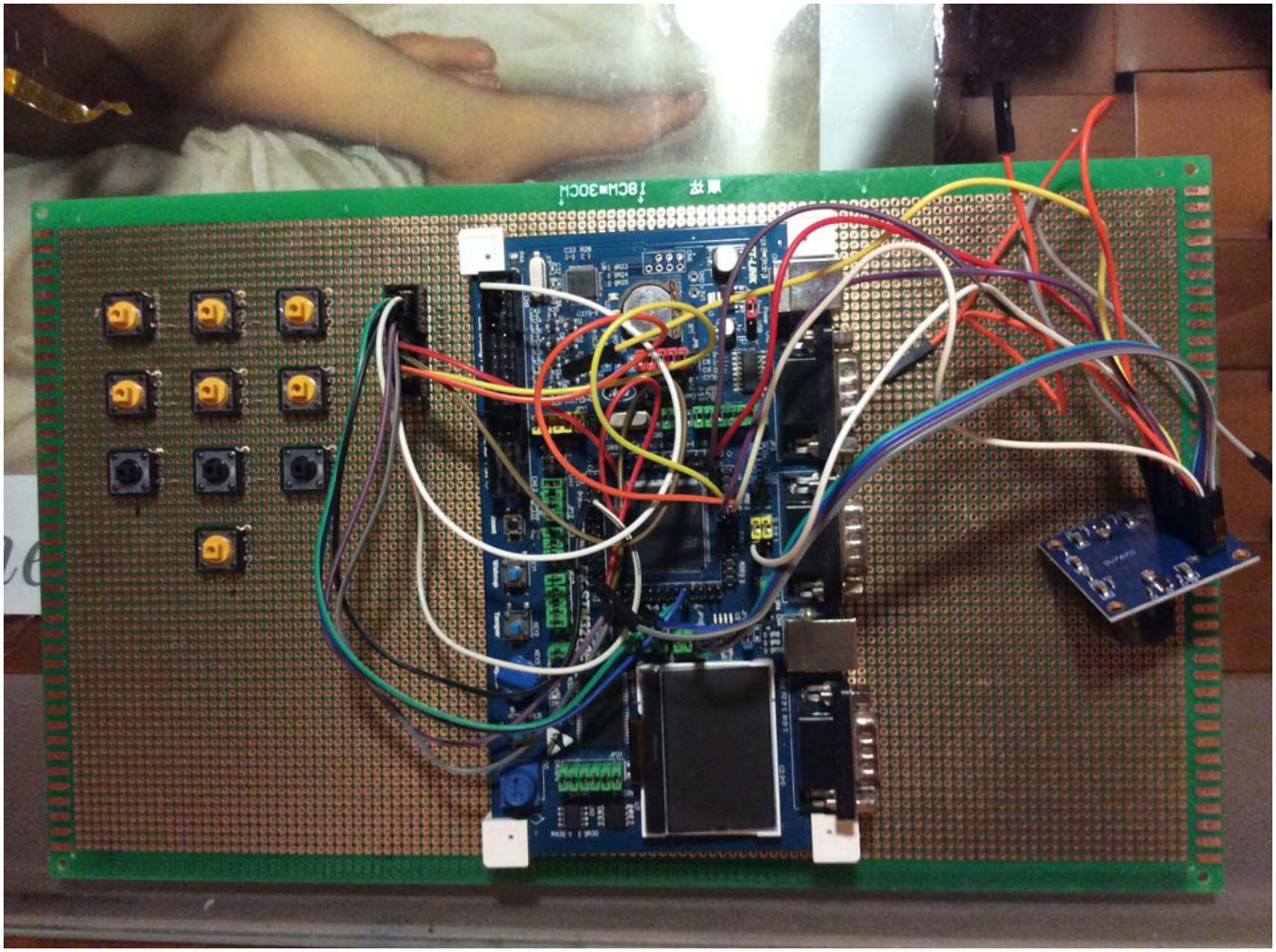
- Detect Fingers Motion with bending sensors
- Convert the signal from bending sensors to PWM signal using stm32
- Control the position through changing the angle within 120 degree of the servo motor
- Use button to control grab or open of the robotic hand
- The robotic hand can move thing from certain distance

# ELEC 3300 Project Summary Sheet

This is a ONE Page Summary Sheet; Content more than 1 page will be deleted.
All the fonts used in this Sheet should be in Times New Roman at 12 points

| | |
|---|---|
| Group Number | 44 |
| Project Title | Bus Catcher |
| Name of Student 1 | LAI, Cheuk Yue Ryan |
| Name of Student 2 | FAN, Ka Chun Vincent |

Please attach ONE photo of your project here



Please list the functions of your project in point form

- Buttons are customers are customized for user to input their desired bus number.
- OV7670 camera capture image and display on LED board.
- The algorithm will locate the black box on the LED board and deduce the number listed in the targeted black box (which is referring to the black box highlighting the bus number on the bus).
- The algorithm will compare the analysis result with the desired number input by the users.
- A sound signal will be given for a match or the camera will capture a new image and analysis again if result does not match.