

**COE/ELE 70AB Milestones Compliance Report (MCR)**

| Project Title | AA05 - Automated Parking Management System |
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| MCR Number | 2 |
| Project Manager for the MCR period | Taskin Abdur-Rahman |
| Team Players for the MCR period | Yadu Krishnan Madhu, Zohraan Badar, Kisoban Rajendran |
| Faculty Supervisor | Alagan Anpalagan |

# **Tasks Outlined for the Reporting Period (e.g. MCR I – Weeks 4 & 5)** (Provide detailed information on the tasks to be completed for the reporting period as per the milestone submitted to your FLC in Week3)

Group: Identify tasks that were assigned and take responsibility for completing them in a timely manner. Identify and document faults, errors and failures that occur and notify team members regarding the documented errors during team meetings.

Student A (Yadu):

* Set up NGROK to expose ESPCAM Web server.
* Export the QR code decode script to Firebase cloud function.
* Set up License Plate detection.
* Set up entrance/exit gate with servo motor.

Student B (Taskin):

* Finish the parking reservation feature.
* Gather some test data to start building data visualization features.
* Connect esp32 to led and sensor circuit and build test with server communication.
* Make any corrections to hardware components and make final validations.
* Build the data visualization pages and backend functions.
* Perform end user testing.
* Build a mock setup for full validation of use cases and perform full validation for 1 parking spot.
* Use this entire phase to fully validate the use case for 1 parking spot.
* Develop a build plan for 7 more parking spots.
* Develop a build plan for housing/enclosure of all electronics.

Student C (Zohraan):

* Import front-end implementation into codesandbox in personal machine.
* Set up a Firebase emulator to run locally.

Student D (Kisoban):

* attempt to simulate a simple test circuit on a breadboard.
* attempt to create a simple outline of the circuit on a breadboard which will reflect on how it will be soldered on the PCB.
* attempt to solder using only 1 pair of green/red leds

# **Progress Made in Reporting Period (e.g. MCR I – Weeks 4 & 5) -** (Provide detailed information on the progress that you (as a group and individual) made during the reporting period. You can include figures, datasheets, flowcharts etc. and additional information as requested by your FLC. You should use your progress to justify compliance to the tasks outlined for the reporting period as per the milestones submitted to your FLC in Week3)

Group: The group has so far identified the individual tasks assigned to them by the PM. We have also successfully completed the tasks outlined within the MCR, even outpacing the timeline projected.

Student A:

* Connected the ESP32 with Firebase API. Established connection to enable read/write operations to the Firebase ``realtime” database.
* Hooked up a simple LED circuit to the ESP32 to display realtime communication between Firebase and the led circuit.
* Set up the ESPCAM web server that functions as an image capture.
* Wrote a python script that captures images and checks for QR codes embedded within images. Script also decodes the QR code if present.

Student B:

* Gathered most of the parts required for testing full use case. Gathered and build components required for the entrance authentication.
* Completed part of profile page.

Student C:

* Completed importing front-end code base into the codesandbox.
* Completed setting up the Firebase emulator.

Student D:

* Created a simple circuit based on the schematic.
* Was able to assert the connections made using the circuit which can now be easily modified to add a load sensor which will work in conjunction with the inverter chip

# **Difficulties Encountered in Reporting Period** (Provide detailed information on the difficulties and issues that you encountered during the reporting period and how you plan to address this in the following periods)

Group: The group faced some initial difficulties in communication as we transitioned from holiday break back to classes, however, issues were resolved with face to face communication and time.

Student A:

* Had difficulties with the ESP32 driver installations which were required to connect and flash the device. Restarting the host machine and resetting the ESP32/ESPCAM seemed to have resolved the issues.
* Had difficulties setting up and linking libraries for compilation, however, Platform IO extension in VS-Code simplified much of the difficulties faced.

Student B:

* Had issues acquiring correct parts which caused some delay in building out the required components.
* Some misunderstandings and miscommunication led to some delay.
* Due to delay, not much progress was made for the web-app.

Student C:

* Had issues with terminal command while trying to import the Firebase project.
* Had issues with importing libraries for Firebase emulator.

Student D:

* required more parts and equipment such as a multimeter, oscilloscope and power source in order to assess if the circuit functions as specified.
* very cramped wiring space (small breadboard) for part installation.
* Soldering parts together proves to be difficult due to narrow space of connections therefore different safety measures are going to be considered (how far apart the connections are going to be)

# **Tasks to Be Completed in the Next Reporting Period** (Outline the tasks to be completed in the next reporting period. Please note this should match with your milestones submitted to your FLC in Week3, however in consultation with (and approval of) your FLC, you can modify this to accommodate incomplete tasks from previous period. Here you should also identify the Project Manager for the next period)

Group: The group will continue making progress while making minute changes regarding tasks outlined in the milestones document. A new revised Milestone document will be prepared for each phase as well. The group is also set to assign a new PM (Taskin Rahman) to guide us in Phase 2.

Student A:

* Set up a local web server(already done) and expose the ESPCAM web-server to the internet (NGINX).
* Set up the NGINX web server.
* Conduct research on enabling cloud functions on firebase to enable running image detection algorithms on the cloud.

Student B:

* Complete frontend pages:
  + Homepage, Parking lot page, QR code page
* Clean up the parking lot setup and prepare for new hardware installation.

Student C:

* Assist in hardware installation
  + Plan for hardware installation and setup
  + Gather tools and resources needed

Student D:

* gather more of the required parts/lab equipment and complete the circuit and make an attempt at soldering the components together for one part of the schematic (which is for one parking spot) then repeat for every parking spot.