**TechShopBD Project Competition**

**Participant Details:**

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| **Your Name** | Animesh Sarkar Tusher |
| **Occupation** | Student |
| **Phone No** | 01796499536 |
| **Address** | Kajla , Rajshahi. |

**Project Details:**

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| **Project Title** | CCTV Footage Based Automatic Car Parking System. |
| **Project Description  (500-800 words)** | 1. Every parking place must now have a **CCTV** in the current day. This **CCTV** footage served as the basis for my project, which employed the "**Image Processing**" method. We will identify vacant parking spaces and spaces that are not empty using **CCTV** footage analysis. Depending on the outcome, it will let a car to enter a parking spot. The driver of a car may check the number of available slots via an LCD display that has been installed at the parking space's entrance before entering. 2. Stopping the usage of "**IR Sensor**" to automate parking garages is a particular aim of this initiative. In my project, no **IR sensors** are utilized. 3. When every parking space is occupied by cars and a car tries to enter, the parking gate won't open and a buzzer will ring. 4. If there are any available slots, the gate will be opened and the LCD display will indicate the free slot numbers. 5. If a vehicle wishes to depart, the parking gate must be opened. 6. When there is available slots in parking space, the RGB will emit green light. If there is no slots available RGB will emit red light and if any vehicle wants to go out from parking space then RGB will emit blue light. 7. A phone camera is used as CCTV and it is connected via USB cable to computer.   **About the video file –**  1) Left part of the video is captured by an external phone. Check LCD display in this video very carefully if it is displaying correctly as well as it is observed that every function of the project is working properly. "CAMERA" heading is used above it.  2) Right part of the video is our **CCTV** footage which we analysed and depending on the data we got, we communicated with arduino .  *(\*) I am extremely sorry for a little bit external noise in video file.*  **About Programme Files -**  There are five files of programme. First four are used for image processing technique . And the fifth one is for transmitting data to arduino.   1. ParkingSpacePicker - Using this programme , we will define the parking slots and entry and outro position of the parking. We have to mark entry first , outro second. Then 1 to last . CarParkPos file generated using the positions of parking slots. Height and width are set manually in this programme. And this height and width value are used in next 2 programmes. A binary file names as “CarParkPos” is generated where the locations of parking slots are stored by this programme. 2. mainWithTrackbars - In this programme we have found thresholds and median value . Thresholds values are used to make threshold image and median value is used to make median. Gaussian Adaptive Threshold method is used here. 3. main - This is the main file . Putted threshold and median value in this code what we got from **mainWithTrackbars** programme. Height and width are set what we got from **ParkingSpacePicker**. And array is generated in this programme . If any car at any slot , it will generate 1 else 0 . 4. controller - Array got from main programme . and using this value , LCD display, RGB ,servo motor and buzzer are controlled. |
| **Application of the Project** |  |
| **Components List** |  |
| **Circuit Diagram** |  |
| **Demo Code** |  |
| **Output**  **Image (720x360 px.)** |  |
| **Output (If any)**  **Video (1920x1080 px.)** |  |
| **Caution** |  |
| **Resource/ Reference** |  |