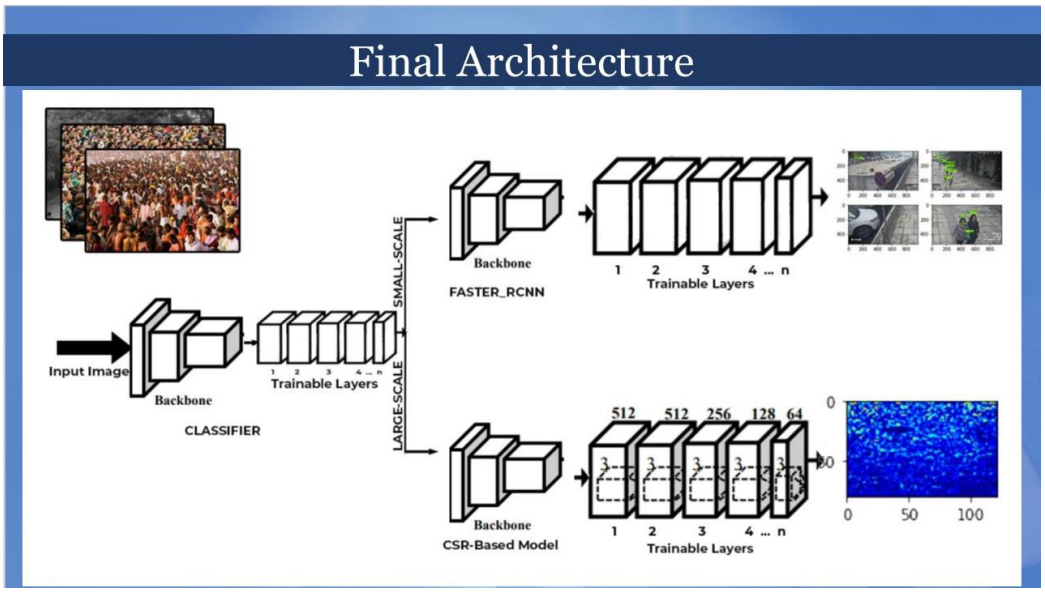
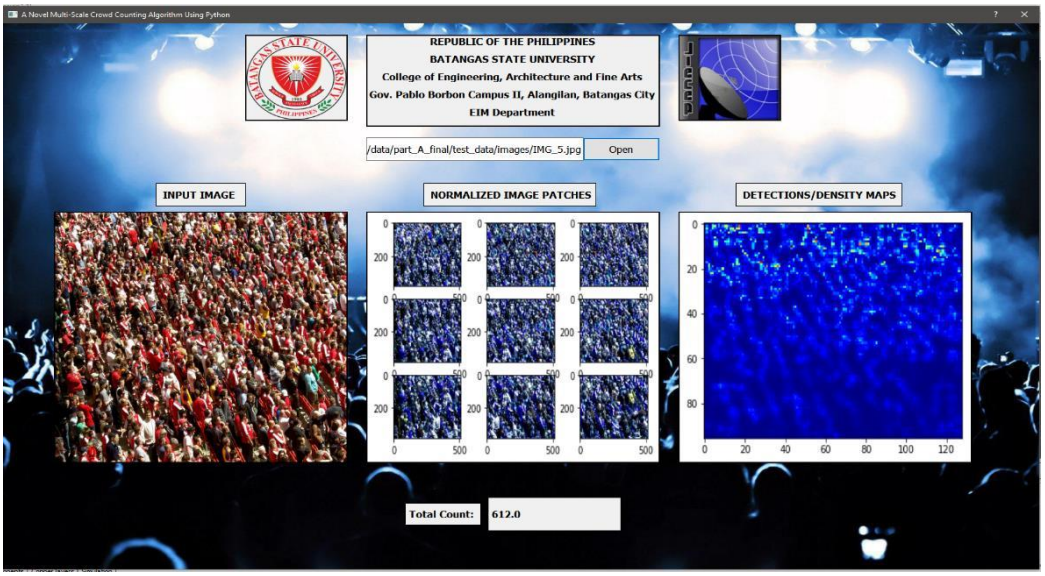
## PROJECTS

**Project 1: A Novel Multiscale Crowd Counting Algorithm Using Python - PyMCCA (Thesis)** 2019

**Technologies used**: *Python, Keras, Tensorflow, OpenCV*

- Created a scale-adaptive algorithm that can count crowds from sparse (0-20) to dense (100-3000+) human heads in a still image.
- Used 3 backends models for deep learning such as VGG-16, Inception V3, Resnet101 to maximize the capability of each model in varying crowds
- Used PyQt for the User Interface and for simplicity of use



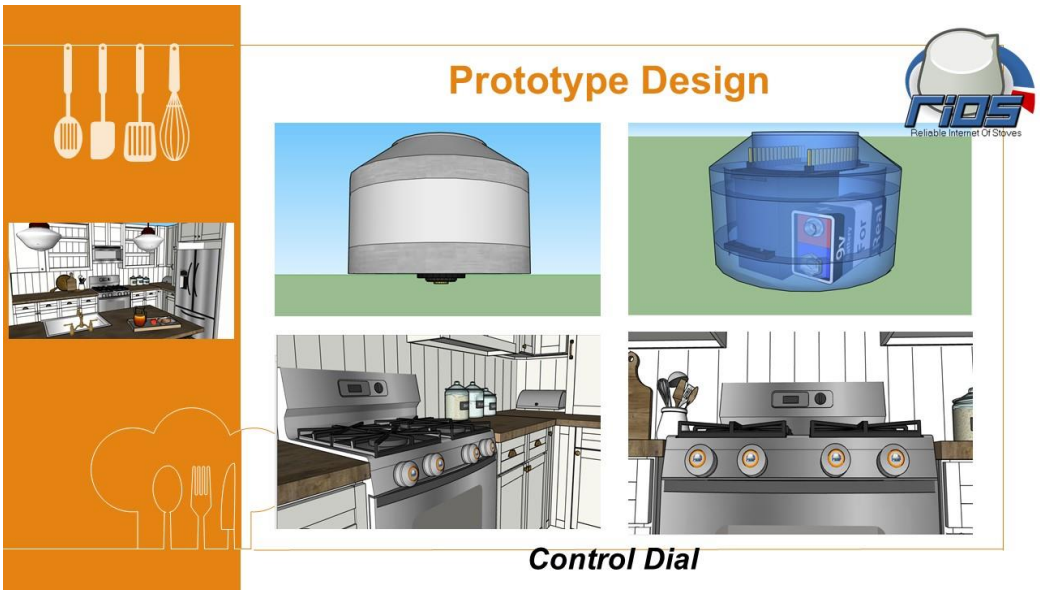


A Novel Multi-Scale Crowd Counting Algorithm Using Python
REPUBLIC OF THE PHILIPPINES
BATANGAS STATE UNIVERSITY
College of Engineering, Architecture and Fine Arts
Gov. Pablo Borbon Campus II, Alangilan, Batangas City
EIM Department
/data/part_A_final/test_data/images/IMG_5.jpg
Open
INPUT IMAGE
NORMALIZED IMAGE PATCHES
DETECTIONS/DENSITY MAPS
Total Count:
612.0

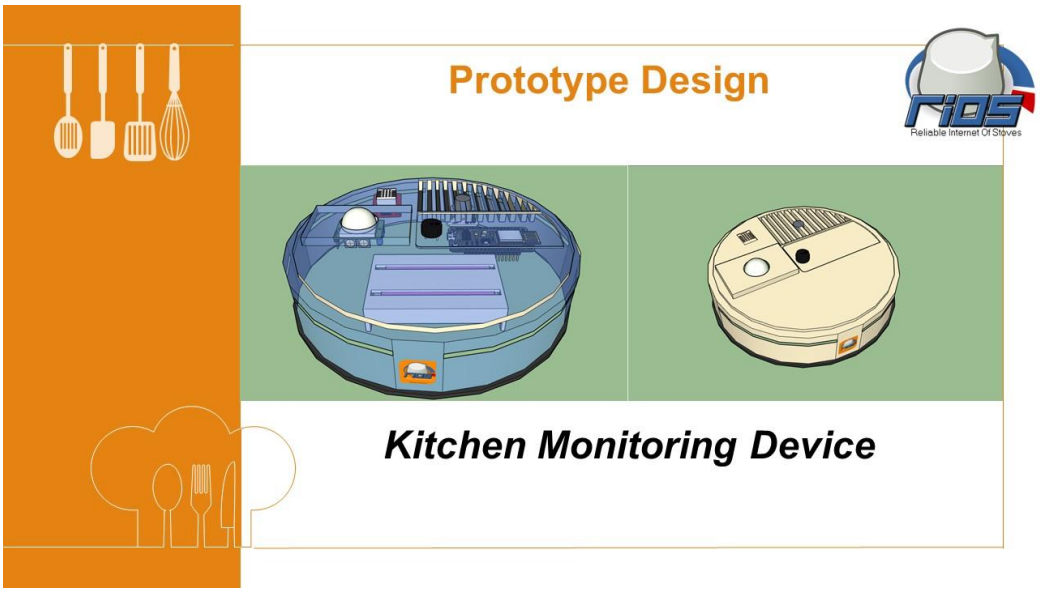
Project 2: RIOS – An IoT solution for kitchen safety [Stove Dial, Monitoring Device, and an Android App] 2019

Technologies used: *Google Firebase, Sketchware, Google Speech Recognition (speech-to-text)*

Hardware used: ESP8266 Wifi, Arduino Mini, Gas Sensor, High-heat sensor, Smoke Sensor

- Designed and created a working prototype of a stove dial that can be installed in gas stoves which can be controlled using an android app. The following controls can be used by a user:
    - Speech Commands (To turn High, Medium, Low heat, and off)
    - Manual Interactive Control
    - Schedule Timer
- On par with the dial, it has a monitoring prototype that will detect excessive heat, smoke, and gas and send warning alerts to the user and automatically turns the dial to off.



## Mobile Application


**Mock Up**

## Voice-activated Control




## Mobile Application

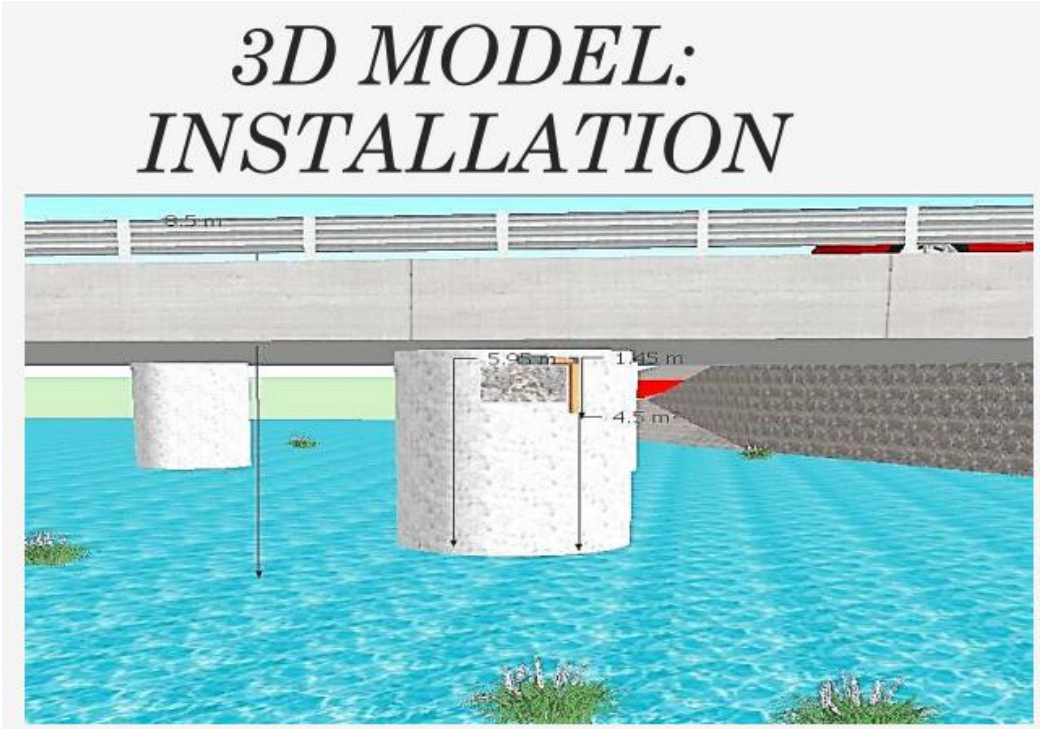

**Kitchen Monitoring**

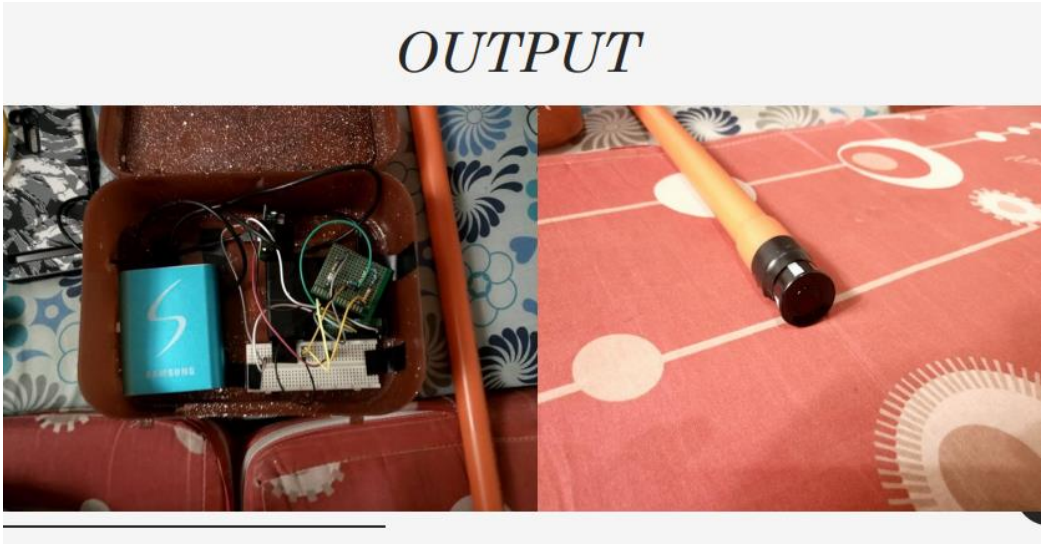
Project 3: Water Level Monitoring System for Calumpang River, Batangas City 2018

Technologies used: *Python, MySQL,*

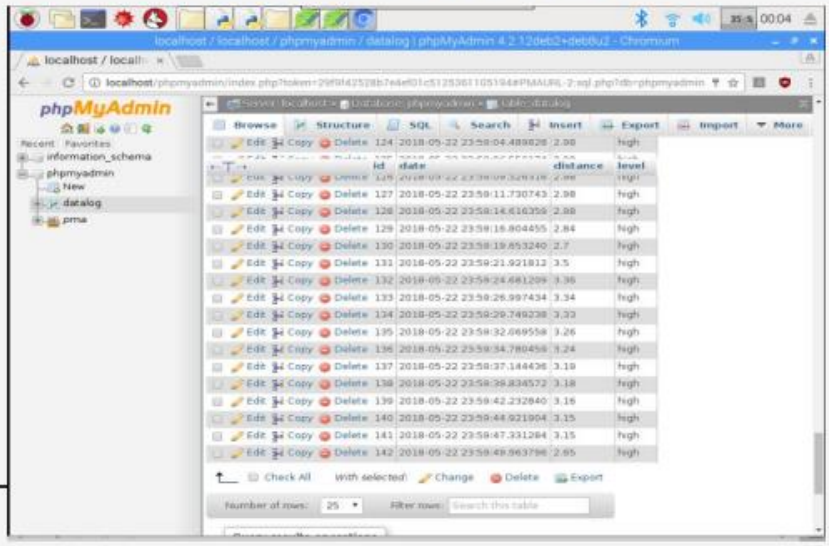
Hardware used: Raspberry Pi 4, Extended Ultrasonic Sensors

- Created a prototype and is modeled to be installed under Calumpang Bridge that will be able to monitor the water level especially during heavy rains that causes flood.
- The prototype sends data to its local MySQL database



# *RESULTS: DATA TO LOCAL DATABASE*



Project 4: Library Inventory Management System 2018

Technologies used: C#, HTML, CSS, JavaScript, MySQL, MS Access

- Two versions were created: A desktop app and A web app
- This was created to modernize the manual processes of bookkeeping and other records and store them on a deployable MySQL database (web) and local database (desktop app)


Admin Access



LoginUser
GCBC
INVENTORY
Saturday, 26 May 2018 11:34:18 AM
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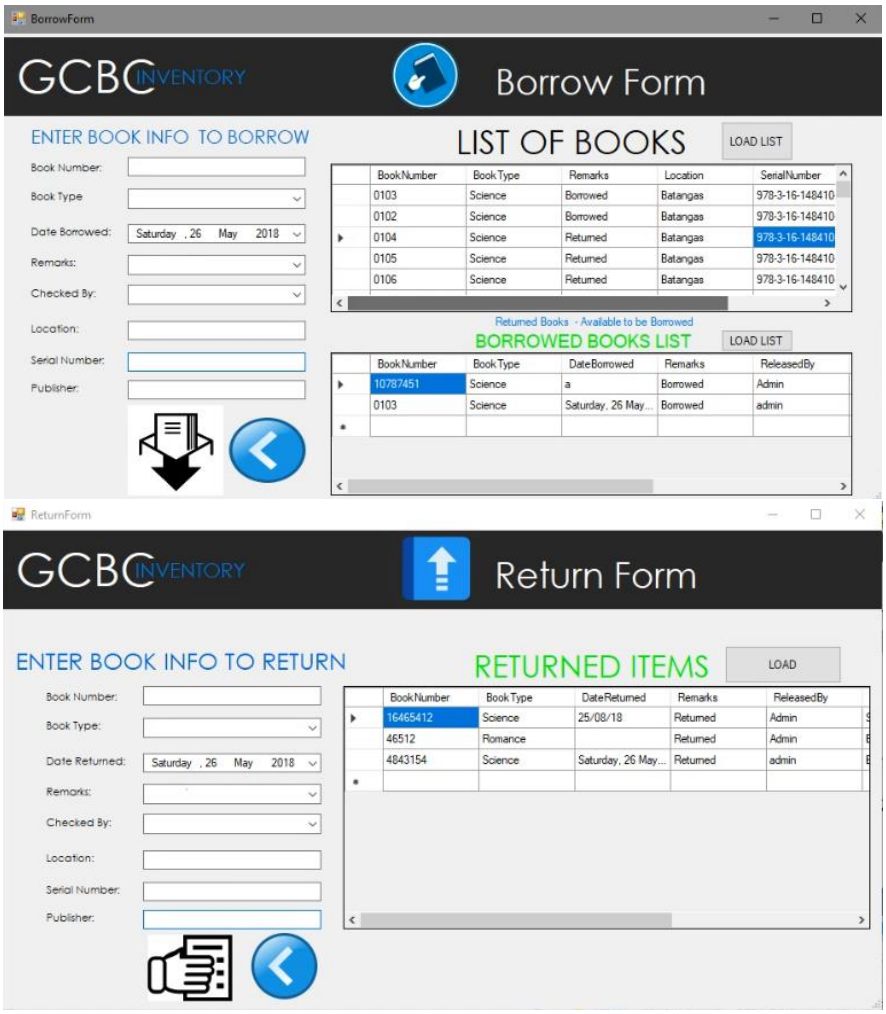
user12345
Password:
Email:
LOGIN
REGISTER
HOME
UserAction
GCBC INVENTORY
Borrow
Return
Home
SELECT ACTION

User Access


BorrowForm
GCBC INVENTORY
Borrow Form
ENTER BOOK INFO TO BORROW
Book Number:
Book Type
Date Borrowed:
Saturday , 26 May 2018
Remarks:
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Location:
Serial Number:
Publisher:
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LOAD LIST
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0102 | Science | Borrowed | Batangas | 978-3-16-148410
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0105 | Science | Returned | Batangas | 978-3-16-148410
0106 | Science | Returned | Batangas | 978-3-16-148410
Returned Books - Available to be Borrowed
BORROWED BOOKS LIST
LOAD LIST
BookNumber | BookType | DateBorrowed | Remarks | ReleasedBy
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0103 | Science | Saturday, 26 May... | Borrowed | admin
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Return Form
ENTER BOOK INFO TO RETURN
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Book Type:
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Saturday , 26 May 2018
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16465412 | Science | 25/08/18 | Returned | Admin
46512 | Romance | | Returned | Admin
4843154 | Science | Saturday, 26 May... | Returned | admin

Project 5: 4WD Robotic Claw Arm Interfaced with LabVIEW 2017

Technologies used: LabVIEW, C/C++

Hardware used: Arduino Uno, Bluetooth Module, Motor Driver, DC Motors. Acrylic Robotic Claw Arm

- Created a mobile 4-wheeled robotic arm with 6 degrees of freedom that can be used for handling corrosive or harmful chemicals.
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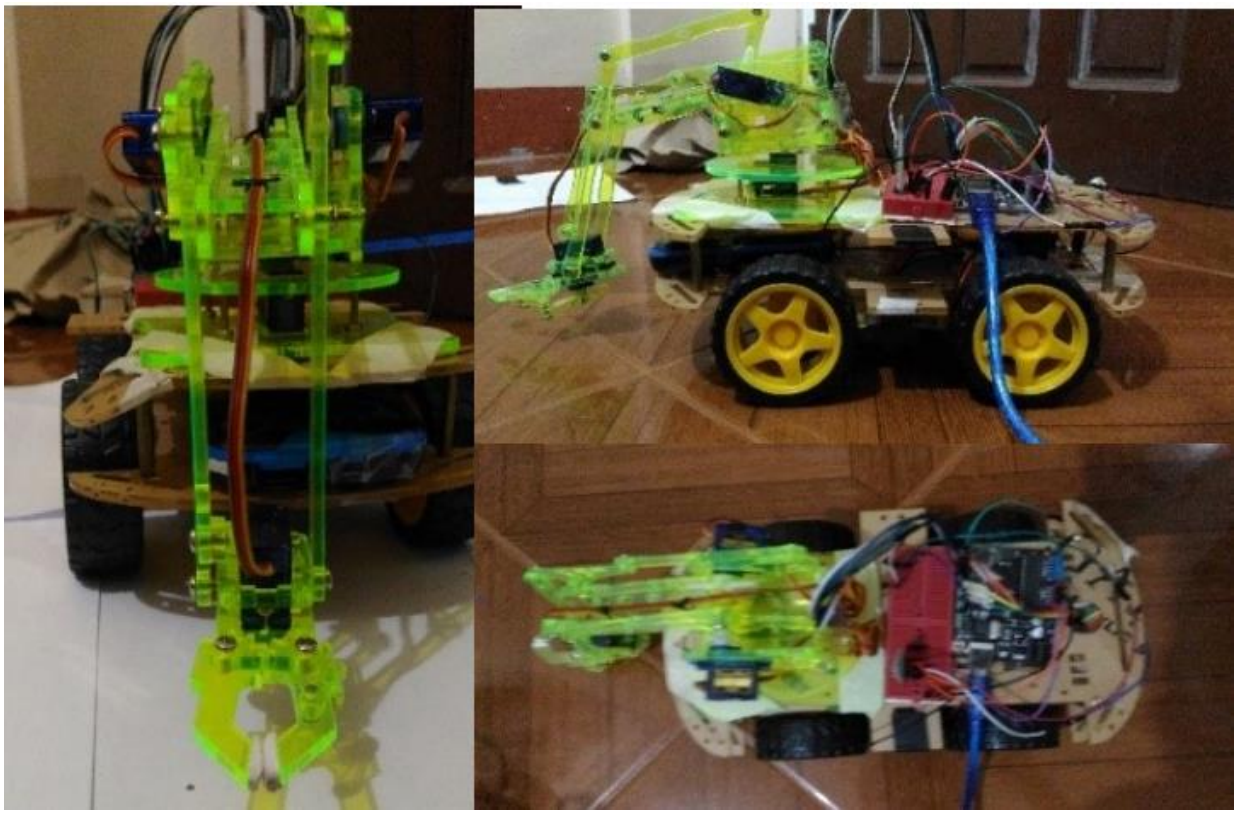

Project 6: BatStateU-PQMS (Paperless Queue Management System) 2018

**Technologies used:** Visual Basic, MS Access

**Hardware used:** USB Internet Dongle

- Created a program that can accommodate customers and alert them through SMS whenever they are few turns away from the currently served ticket number.