APPROVAL SHEET

In partial fulfilment of the requirements for the degree Bachelor of Science in Computer Engineering, this research paper entitled "**Street Parking Monitoring System**" has been prepared and submitted by **Kenneth R. Oblea, Diane Anne Claudette P. Razalan, and Ranjit G. San Jose** who are hereby recommended for oral examination.

RENATO R. MAALIW III, DIT
Research Adviser

Approved in partial fulfilment of the requirements for the degree Bachelor of Science in Computer Engineering by the oral examination committee.

DEAN ADRIAN L. NOMBREFIA, CpE
Panel

LEONARD ALLEN R. PAVINO, CpE
Panel

JERWIN V. OBMERGA, CpE
Chairman

Accepted in partial fulfilment of the requirements for the degree Bachelor of Science in Computer Engineering

June 4, 2020
Date

RENATO R. MAALIW III, DIT
Dean, College of Engineering

APPROVAL SHEET

In partial fulfillment of the requirements for the Degree Bachelor of Science in Computer Engineering, this research paper entitled, **Automated Rental System for Internet Cafe**, has been prepared and submitted by **Felmae Bernaline S. Cabingan** and **Jeanmuelle G. Dejelo,** who is hereby recommended for oral examination.

RENATO R. MAALIW III, DIT
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Approved in partial fulfillment of the requirements for the degree, Bachelor of Science in Electronics Engineering, by the oral examination committee.

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June 4, 2020
Date

RENATO R. MAALIW, DIT
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ABSTRACT

Title: Automated Rental System for Internet Cafe
Authors: Cabingan, Felmae Bernaline S.
Dejelo, Jeanmuelle G.
Adviser: Engr. Renato R. Maaliw III

This study entitled "Automated Rental System for Internet Cafe" was conducted to design and develop a system that will automate the work of a cashier. Components such as sensors, microcontroller, server computer and touch screen display are used in the construction of the said system. Specifically, it aimed to design the physique and graphical user interface of the system, and to determine the appropriate materials needed in the construction of the said system. Likewise, it aimed to create a program for the proper operation of the device. An experimental type of research was used as they will automate the traditional transactions for internet café and they want to compare the manual operation from the automated system. This study intends to handle every retail service transaction in an internet café with less human intervention. The system automates the work of a cashier by using a kiosk that will accept and validate payments through a bill acceptor or through an RFID reader using cards. This system also enables customers to use their smartphones in paying their rental time. The researchers have developed the existing Piso-net which is an internet gaming vending machine by accepting paper bills instead of coins. Also, the individual PCs are networked in the kiosks unlike in Piso-net that have an individual machine for every PCs. With this system, the said business has been able to reduce its labor cost on operation and boosted their sales as people got fond of the said innovative system.

Keywords: bill acceptor, internet café, kiosk, microcontroller, RFID

Abstract

Title: Street Parking Monitoring System

Authors:

Kenneth R. Oblea

Diane Anne Claudette P. Razalan

Ranjit G. San Jose

Adviser: Dr. Renato R. Maaliw III

Unwarranted parking behaviors are rampant in poorly monitored areas causing obstructions to major roads. Such reckless actions could lead to accidents or delays to emergency-responding vehicles or cause impedance to traffic in general. This led the researchers to create a monitoring system that can detect illegally parked vehicles via a closed-circuit television (CCTV) camera aiming to identify a fitting object detection algorithm that will help in detecting vehicles. The system should also be able to send a notification to the respective authority in the form of a text message whenever a vehicle has stayed for more than 5 minutes inside the region of interest (ROI). Moreover, the researchers evaluated the system for its effectiveness. This research followed the applied method of research since the study provided a solution to an existing problem. Upon careful planning, data collection, programming, assembly, and evaluation of the system, the researchers concluded that the street parking monitoring system proved to be effective in detecting illegally parked vehicles. The accuracy was measured at 84% and the Matthews correlation coefficient (MCC) at 0.842, indicating reliable prediction. Affecting the accuracy were the vehicles undetectable by the YOLO algorithm. Otherwise the accuracy

could have been higher. The precision, however, indicated that the monitoring system was able to determine illegally parked vehicles 100% of the time as long as the YOLO algorithm could detect the vehicle. For reasons herein stated, the researchers were able to carry out the development of a street parking monitoring system.

Keywords: algorithm, CCTV, illegal parking, monitoring system, object detection

PROOF THAT THE ADVISEE HAS PASSED THEIR THESIS
(SCREENSHOTS FROM THEIR VIRTUAL GRADUATION CEREMONY IN 2020)