

Real-Time Attendance System for Seamless Workforce Management

Nema Rashi¹, Ojha Ujjwala², Bose Sushant³, Dr. Jain Amita⁴

^{1,2,3}Students, Electronics and Communication Engineering, Lakshmi Narain College of Technology & Science, Bhopal, Madhya Pradesh, India.

⁴Professor, Electronics and Communication Engineering, Lakshmi Narain College of Technology & Science, Bhopal, Madhya Pradesh, India.

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Abstract: An imaginative program intended to further develop participation following and the board in different circumstances is the Ongoing Following and the executive's framework utilizing RSSI. This task consolidates Radio Transmission Strength Pointer (RSSI) innovation with implanted gadgets to give exact ongoing following of people inside characterized premises. It likewise consolidates with a strong detailing framework to create insightful information and participation records. Better asset distribution and the board are made conceivable by the reconciliation of labor information, which expands specialist usage.

Key words: RSSI Technology, GSM, Python Image Processing, PLX-DAQ, IOT.

I.INTRODUCTION

Customary participation checking methodology are changed by a Brilliant Participation the executives Framework that consolidates ongoing following and detailing with RSSI (Got Signal Strength Marker) innovation and labor force joining. This framework guarantees exact participation records by checking individuals progressively using refined RSSI innovation. This inventive framework's labor force combination ensures a careful technique that joins human oversight with innovative productivity for exact participation following. At the point when consolidated, these parts give a smart arrangement that further develops detailing accuracy, works on following participation, and expands asset use across a scope of hierarchical settings.

II.SCOPE OF THE PROJECT

The significant scope of this project is to create an integrated attendance management system using Arduino, RSSI technology, Python image processing, and IoT communication for real-time monitoring and reporting of student attendance.

III.EXISTING SYSTEM AND ITS DISADVANTAGES

The current framework might depend on manual techniques for participation following, for example, accepting roll calls or utilizing paper-based frameworks. With manual participation following, there is in many cases a defer in refreshing and getting to participation information. This can be tedious, inclined to mistakes, and require manual work to refresh and keep up with participation records. This can bring about difficulties with regards to checking understudy participation progressively, making it challenging for staff or heads to make a prompt move in the event that an understudy is missing.

IV.PROPOSED SYSTEM AND ITS ADVANTAGES

The proposed framework computerizes the participation following interaction utilizing Arduino Uno microcontroller, RSSI innovation, and Python picture handling. The present and missing status of understudies are refreshed in the PLX-DAQ data set, giving a concentrated and dependable store for participation records. This mechanization lessens the requirement for manual exertion and smoothes out the participation following cycle, prompting further developed proficiency. This upgrades information precision, availability, and makes it simpler to create reports and investigate participation designs.

V.BLOCK DIAGRAMAND WORKING

In this framework, Arduino uno microcontroller is utilized to control all over framework. Get Signal Strength Recognizable proof (RSSI) innovation is utilized to distinguish regardless of whether understudy arrive at the school zone as per the sign strength. Python picture handling is utilized to perceive the understudies' face. After the affirmation of two cycle, the present and missing status will be refreshed in PLX-DAQ data set. The understudies' status will likewise be refreshed in IOT website page. On the off chance that understudy is missing, the alarm message will be shipped off the staff or head with the assistance of Worldwide Framework for Versatile correspondence (GSM). Fluid Precious stone Presentation (LCD) is utilized to show the new status about the understudies.

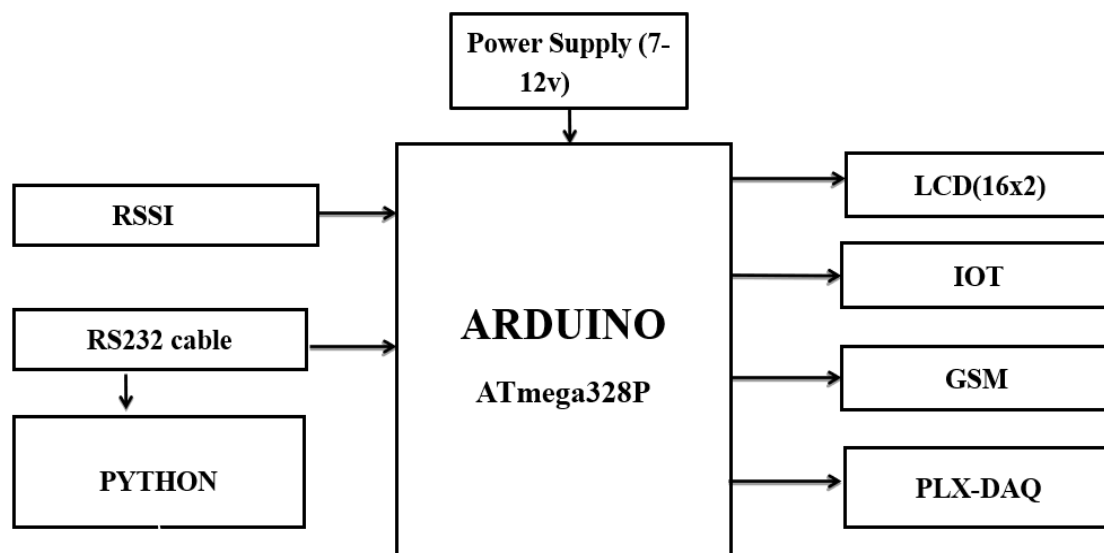


Fig., 1 Block Diagram

VI. HARDWARE AND SOFTWARE DESCRIPTION

I. Arduino UNO

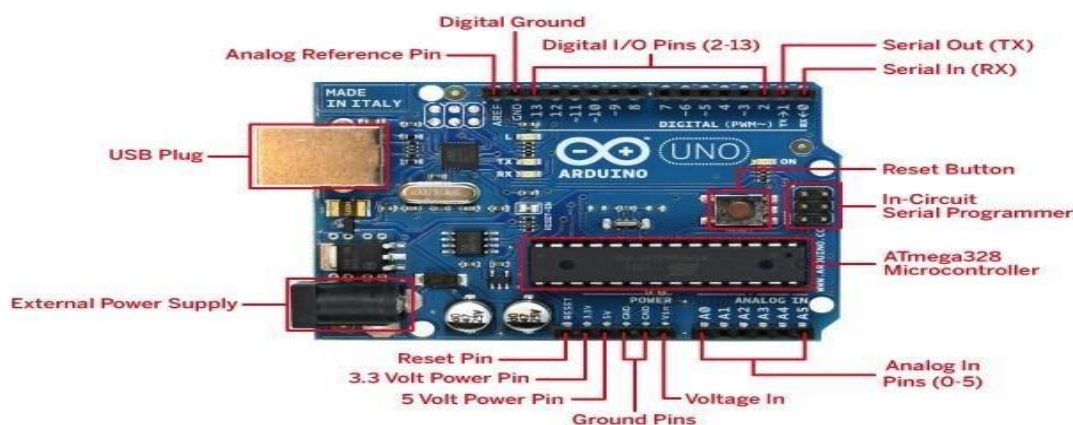


Fig., 2 Pin Diagram of Arduino UNO

The Arduino Uno is a generally utilized microcontroller board that depends on the ATmega328P microcontroller chip. It highlights 14 computerized input/output pins, 6 simple data sources, a 16 MHz quartz crystal, a USB association for programming and power, and a power jack, making it a flexible and easy to use choice reasonable for both fledgling and experienced clients.

Arduino Uno is made out of a few key parts, each with its own capability:

All Microcontroller: The ATmega328P microcontroller chip capabilities as the focal handling unit of the board, overseeing its tasks.

Computerized information and result sticks: The board involves 14 computerized input/output pins, equipped for interacting with a scope of sensors, actuators, and parts. These pins can be customized as information sources or results, according to the undertaking's prerequisites.

Simple info pins: The board likewise includes that there are 6 simple info sticks that can peruse simple signals like temperature and light levels.

USB connection: The USB association is utilized for programming and power, permitting the board to be controlled and modified utilizing a USB link associated with a PC.

Power jack: The board can be controlled utilizing an outer power supply through the power jack.

Reset button: This reset button is utilized to reset the board, which is helpful for restarting a program or transferring new code.

II. GSM

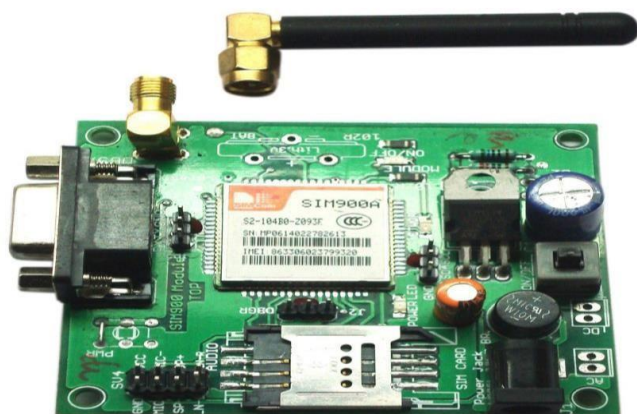


Fig., 3 GSM MODULE

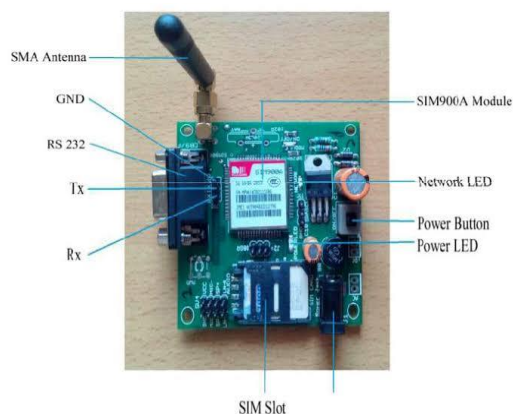
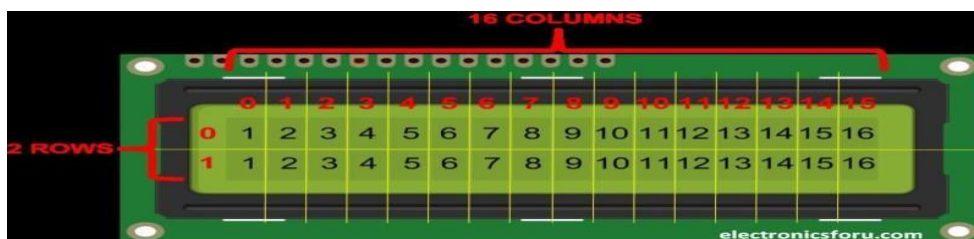


Fig., 4 Pin Diagram of GSM Module

A wireless modem that is compatible with GSM wireless networks is known as a GSM modem. The main distinction is that a wireless modem transmits and receives data using radio waves, whereas a dial-up modem sends and receives data over a fixed phone line. Commands are the foundation of how a GSM modem operates; they always begin with AT, or "attention," and end with a character. For instance, the dialing command in this case is ATD; ATD3314629080; a semicolon is used to finish the dialing command. Using a PC or controller, the GSM modem receives the AT commands. With the use of the GSM modem's MAX 232 pin, the controller and modem are serially interfaced.

III. LCD



FigL., 5 16x2 CD Display

LCD screen is a type of electronic display module and it has several uses. Lcd is a 16x2 type display which can show up to 16 characters in each of its two lines .Every character is displayed 5x7 pixel matrix. There are mainly two types of registers in their LCD namely command and Data register .The command instructions sent are kept in command register. Tasks such as initializing, clearing the screen, adjusting display are given as Instructions to an Lcd to perform which are commonly referred to as commands. An LCD is an electrical display module. It can be able to create a visible image liquid crystal.

IV. Internet of Things

The Internet of Things, commonly referred to as IoT, denotes a network infrastructure comprising physical entities such as cars, buildings, and various other objects. These entities are equipped with electronics, software, sensors, actuators, and network connectivity, facilitating the gathering and dissemination of data. When furnished with sensors and actuators, IoT joins the broader category of cyber-physical systems, encompassing smart grids, smart homes, intelligent transportation, and smart cities. This amalgamation empowers remote sensing and control via existing network structures, presenting opportunities for direct amalgamation of the physical domain with computer-based systems. Consequently, this convergence augments productivity, precision, and financial efficiency.

VII. SOFTWARE REQUIREMENTS

I. Arduino Software

IDE- the Arduino Software is also known as the Arduino Integrated Development Environment. The IDE includes a text console, message box, text editor to write and edit the codes and a toolbar with buttons for frequently used tasks, and other menus. In this software we are using embedded C programming language for connecting the device. To upload programs and interact with the Arduino hardware, it connects to them.

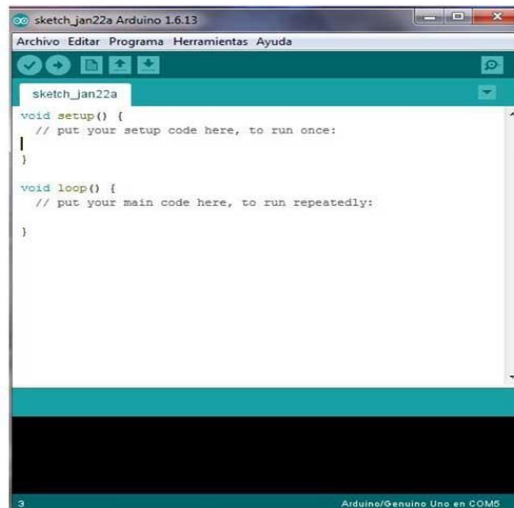


Fig., 6 Arduino Software

VIII.APPLICATION AREAS

The development of business sectors and applications over late years has used an extensive effect on their financial potential and their ability to address cultural patterns and worries in the following many years. Cultural patterns are arranged into wellbeing and health, transportation and versatility, security and security, energy and climate, correspondence, and e-society. These patterns present critical open doors in business sectors like buyer hardware, auto gadgets, clinical applications, and correspondence. The movement of semiconductor innovation, enveloping More-Moore and More-than-Moore, as well as progressions in correspondences, organizations, and programming, straightforwardly add to improving these applications.

IX.CONCLUSION

All in all, this imaginative participation the executive's framework flawlessly amalgamates state of the art advances to make a proficient and mechanized arrangement. Arduino Uno fills in as the focal regulator, organizing the coordination of RSSI innovation for area following and Python picture handling for facial acknowledgment. The framework's capacity to precisely decide an understudy's presence or nonappearance through these cycles and update the PLX-DAQ information base and an IoT site page guarantees constant observing and detailing. The consideration of GSM cautions for missing understudies and a powerful LCD show upgrades correspondence and gives important experiences to both school organization and understudies, denoting a huge jump forward in participation the executives inside instructive conditions.

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