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# AUDIO SPY OVER CELLULAR NETWORK

**Bura Abhinav[1] , Achanta Lokesh chowdary[2], Addula Hemanth Reddy[3] ,Dr P Dileep [4]**

[1,2,3]B.Tech Student, Department of CSE (Internet of Things), Malla Reddy College of Engineering and Technology, Hyderabad, India.

[4] Professor, Department of CSE (Internet of Things), Malla Reddy College of Engineering andTechnology, Hyderabad, India.

***Abstract*—**In this project, we will design and build an audio spy gadget using an A9G module, which is a low-cost and low-power GSM/GPRS+GPS module that can be easily interfaced with Arduino. The gadget will be able to record sound from a microphone and store it on an SD card, or transmit it to a phone number via voice call.The gadget will be controlled by AT commands sent from a phone or another Arduino board. We will use the Arduino IDE to program the A9G module and test its functionality.

***Keywords –*** *Audio spy, cellular network, A9g module.GSM/GPRS+GPS.*

## I.INTRODUCTION

In an era marked by unprecedented advancements in technology, the realm of telecommunications has seen a transformative evolution. With the increasing demand for secure and covert communication, innovative solutions have emerged to address the needs of discreet information exchange. This project delves into the domain of audio surveillance over cellular networks, providing an ingenious answer to a pressing issue.The cornerstone of this project is the A9G module, a versatile device equipped with 2G voice calling capabilities. It offers an inconspicuous channel for communication that bypasses the scrutiny of conventional phone calls, ensuring privacy and security in sensitive situations. Whether it's monitoring suspects in criminal activities or individuals with malicious intent, this cutting-edge technology enables surveillance without detection.

In this presentation, we will explore the intricate workings of the A9G module, understand the significance of this project in clandestine operations, and shed light on its potential applications. By delving into the depths of audio spy over cellular networks, we reveal an invaluable tool that not only safeguards vital information but also provides an upper hand in situations where discretion is paramount. The A9G module is a compact and versatile communication module designed for IoT and M2M applications, renowned for its 2G

GSM/GPRS voice calling and data transmission capabilities operating in the 850/900/1800/1900MHz frequency bands, making it globally compatible. This module also incorporates GNSS for accurate location tracking and features a built-in microcontroller (MCU) for custom programming and sensor interfacing. Its low power consumption makes it ideal for energy-efficient, long-lasting devices in fields like asset tracking, remote monitoring, security systems, and more. Furthermore, it offers a software development kit (SDK) and development resources for customization while adhering to regional regulatory requirements. The A9G module is particularly valuable for covert surveillance applications, as it enables discreet voice communication over 2G networks in a compact form factor, contributing to its widespread adoption in the IoT and M2M landscape.

## II LITERATURE REVIEW

[1] Mohammad Aazam Pham Phuoc Hung Eui Smart gateway-based communication for cloud of things This paper basically states that how iot and cloud can be integrated. How it help in better utilization of network and cloud resources. Detailed information of iot and cloud with their types is provided in this paper.

[2] Anand Nayyar, Vikram Puri Smart farming: IoT based smart sensors agriculture stick for live temperature and moisture monitoring using Arduino, cloud computing & solar technology. This paper shows how Arduino board is used in agricultural application. This project uses esp 8266 to access or communicate with cloud. In this paper soil moisture, temperature sensor is used. Also for charging purpose they used solar power system.

[3] Pavankumar Naik Arun KumbiKirthishreeKatti NagarajTelkar AUTOMATION OF IRRIGATION SYSTEM USING IoT This paper speaks about automatic irrigation system with help of Arduino board. They have used sensor like soil moisture, temperature, humidity and motor which is driven by relay. They have provided android support for monitoring the status of each of sensors.

[4] André Glória, Francisco, Cercas Nuno Souto Design and implementation of an IoT gateway to create smart environmentsThis paper speaks about how swimming pool can be control by using application of iot. This project uses Arduino board as a main controller. It uses sensor like LDR for pool light, water level sensor for detecting water level inside pool, humidity sensor to measure relative humidity and used a relay to control water motor remotely.

[5] Neha Khanna, GurmohanSingh, D.K. Jain, Manjit Kaur DESIGN AND DEVELOPMENT OF SOIL MOISTURE SENSOR AND RESPONSE MONITORING SYSTEM This paper shows how soil moisture sensor works with detailed study of it, with their types. In This paper soil moisture sensor is interfaced with pic microcontroller. As a

result it shows the response of soil moisture sensor depending on values on the sensors. This paper basically shows how soil moisture sensors can be used as response monitoring system.

[6] Mohammad Woli Ullah Mohammad Golam Mortuza Md. Humayun Kabir Zia Uddin Ahmed Internet of Things Based Smart Greenhouse: Remote Monitoring and Automatic Control. This paper based on greenhouse. The project controls the temperature, humidity, light and soil moisture level by sensing the values from sensors and controlling heaters/coolers, sprayers, bulbs and water pumps accordingly. It uses atmega328p microcontroller. For communication with internet it uses GSM/GPRS module.

[7] S. Kalaivanan* and SangeethaManoharan Monitoring and Controlling of Smart Homes using IoT and Low Power Wireless TechnologyThis paper is based on home automation system. They have used zigbee routers which are connected to Arduino. For sending sensordata from zigbee module to internet they have used esp8266 module. They have used sensor like temperature sensor,


## BLOCK DIAGRAM & DESCRIPTION

A. A9g module:

A9G is a complete quad-band GSM/GPRS+GPS module based on the RDA8955 chip. The cost reduction of the core chip provides users with a cost-effective IoT solution. Integrating protocol stacks such as GSM/GPRS inside, this module supports the basic phone voice call/SMS, serial to GPRS and GPS data transmission functions, which can be used in a wide range of applications, such as IoT, vehicle-mounted equipment, remote localization, electric power environment monitoring.

Only one mobile phone card or Internet of Things card is needed to enable the device to have information transmission functions such as GPRS/GPS/ SMS/voice call, A9G could also work with other devices by AT command. Besides, the module comes with 29 GPIOs and integrated SDK that could greatly facilitate private redevelopment.

AT Commands:

AT+GPS=1: This command is used to enable GPS. When this command is sent the GPS is turned On and the LED on module for GPS starts blinking.

AT+GPS=0: This command is used to turn OFF GPS. After sending this command GPS is turned OFF and LED also stops blinking

AT+GPSRD=1: This command is used to start reading GPS data and display it on the monitor. The data returned by this command is in NMEA format which needs to be converted to get into a readable form.

AT+GPSRD=0: This command is used to stop reading the GPS data.

AT+LOCATION=1: This command is used to get location data through the LBS server. It displays the location information in the form of latitude and longitude.

AT+GPSUPGRADE: Release GPS UART from A9's CPU, then you can connect GPS UART directly to communicate with GPS.

AT+CGPSPWR: This command is used for GPS Power Control. It is used to turn on or turn off the GPS Power supply

AT+CGPSRST: This command resets GPS in COLD start mode or autonomy mode. AT+CGPSRST=0 resets GPS in cold start mode and command AT+CGPSRST=1 resets GPS in autonomy mode.

AT+CREG?: This command is used to check whether we are registered to the network or not. If it shows 1, 1 as a response then this means that we are registered and can move ahead.

AT+CGATT: This command is similar to the CREG command. If its response is 1 then we are connected to the network.

AT+CIPSTATUS: This command is used to check whether the IP is connected or Not. If its response is "INITIAL" then it means that we are connected. If it shows something else then there is some problem.

AT+CGDCONT=1: This command is used to connect to the Internet. In this command, we need to specify the APN and IP as well in the format given as AT+CGDCONT=1, "IP", "www"

AT+HTTPGET: This command is used to send an HTTP get request to any server link. Its format is AT+HTTPGET="server link".

AT+CIPMODE: This is used for selecting TCP/IP application mode. '0' os non-transparent mode and '1' is the transparent mode.

AT+CIPACK: This command checks the state of data transmission. It will return the amount of data sent, data acknowledged by the server, and data not confirmed by the server.

B. Arduino:

The Arduino Uno is an open-source microcontroller board based on the Microchip ATmega328P microcontroller (MCU) and developed by Arduino.cc and initially released in 2010.[2][3] The microcontroller board is equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits. The board has 14 digital I/O pins (six capable of PWM output), 6 analog I/O pins, and is programmable with the Arduino IDE (Integrated Development Environment), via a type B USB cable.[4] It can be powered by a USB cable or a barrel connector that accepts voltages between 7 and 20 volts, such as a rectangular 9-volt battery.

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The Arduino Uno has a number of facilities for communicating with a computer, another Arduino board, or other microcontrollers. The ATmega328 provides UART TTL (5V) serial communication, which is available on digital pins 0 (RX) and 1 (TX). An ATmega16U2 on the board channels this serial communication over USB and appears as a virtual com port to software on the computer. The 16U2 firmware uses the standard USB COM drivers, and no external driver is needed. However, on Windows, a .inf file is required. Arduino Software (IDE) includes a serial monitor which allows simple textual data to be sent to and from the board. The RX and TX LEDs on the board will flash when data is being transmitted via the USB-to-serial chip and USB connection to the computer (but not for serial communication on pins 0 and 1). A Software Serial library allows serial communication on any of the Uno's digital pins.

C. Working:

Initally to upload the code we remove the tx and rx pins and then we upload the code. after uploading then we connect the tx and the rx pins to maintain a serial communication with the module for testing we have used a diffrent cicuit which enables us to maintain a direct serial communication with the a9g board and the output will be directly visible on the serial port of the aurdino idle. now we can give at commands to communicate with the board.

now we have dynamically given the at commands to the a9g board using c language and the below code. now we can directly leave the module and test it in the real world.

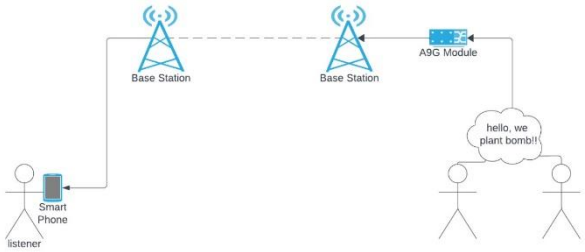


Fig: Architecture Diagram

CONCLUSION

In conclusion, the project focused on deploying the A9G module to address the need for discreet and secure audio surveillance over cellular networks. This innovative technology provided an effective solution for covert communication and monitoring in situations where traditional phone calls could risk exposure. The A9G module's 2G voice calling capabilities, low power consumption, and integrated features such as GNSS and an MCU, made it an invaluable tool for applications like tracking and surveillance. The project's success lies in its ability to combine these capabilities, enabling surveillance in sensitive situations without detection.

The A9G module's potential extends to various fields, from law enforcement and intelligence

agencies to private security and industrial monitoring. However, it is essential to emphasize the importance of using such technology within legal and ethical boundaries, respecting privacy and adhering to applicable regulations. The project has demonstrated the power of technology to enhance covert communication and data transmission, and its applications are limited only by the imagination and the responsibility of those who employ it. As technology continues to evolve, so too will the opportunities and challenges presented by innovative solutions like the A9G module.

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