ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY
(Unit of Alva's Education Foundation (R), Moodbidri)
Affiliated to Visvesvaraya Technological University, Belagavi &
Approved by AICTE, New Delhi. Recognized by Government of Karnataka.
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

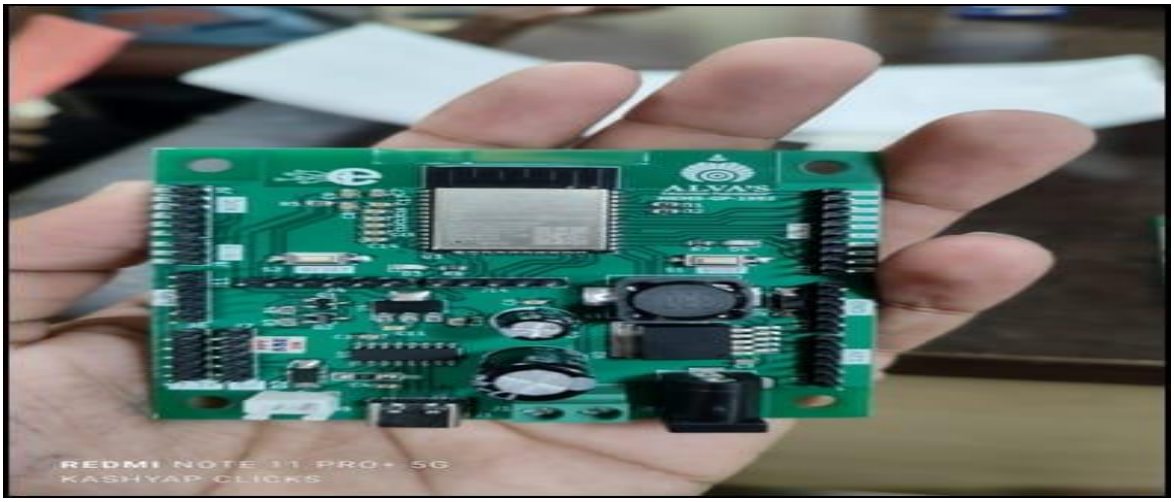
Product Development @ Department of ECE

Product Development and Innovation:

AIET ECE department is creative in finding real time product for the problem statements of campus and society. It has developed IoT development board for VTU prescribed syllabus in Internet of Things (IoT) lab. The Department has also developed RFID telephone, 9 Watts inverter bulbs, wireless IoT devices like display boards and wireless inaugurating device.

(a)AIET MEMS GP:

ALVAS MEMS GP- 1992 board is developed based on ESP 32 Processor. the has powerful, generic Wi-Fi + Bluetooth® + Bluetooth LE MCU modules that target a wide variety of applications, ranging from low-power sensor networks to the most demanding tasks, such as voice encoding, music streaming and MP3 decoding. At the core of the two modules is the ESP32-D0WD chip that belongs to the ESP32 series* of chips. The chip embedded is designed to be scalable and adaptive. There are two CPU cores that can be individually controlled, and the CPU clock frequency is adjustable from 80 MHz to 240 MHz. The chip also has a low-power coprocessor that can be used instead of the CPU to save power while performing tasks that do not require much computing power, such as monitoring of peripherals. ESP32 integrates a rich set of peripherals, ranging from capacitive touch sensors, SD card interface, Ethernet, high-speed SPI, UART, I2S, and I2C. The integration of Bluetooth®, Bluetooth LE, and Wi-Fi ensures that a wide range of applications can be targeted and that the module is all-around: using Wi-Fi allows a large physical range and direct connection to the Internet through a Wi-Fi router, while using Bluetooth allows the user to conveniently connect to the phone or broadcast low energy beacons for its detection. The sleep current of the ESP32 chip is less than 5 µA, making it suitable for battery-powered and wearable electronics applications. The module supports a data rate of up to 150 Mbps, and 20 dBm output powers at the antenna to ensure the widest physical range. As such the module does offer industry-leading specifications and the best performance for electronic integration, range, power consumption, and connectivity. The operating system chosen for ESP32 is free RTOS with LwIP; TLS 1.2 with hardware acceleration is built in as well. Secure (encrypted) over-the-air (OTA) upgrade is also supported, so that users can upgrade their products even after their release, at minimum cost and effort.



(b) <u>AIET RFID Telephone</u>:

ALVAS RFID Telephones are customized for the ALVAS campus to prevent the students from over usage of smart phones. These devices support only GSM calls to the parents.

(c) <u>Wireless Inaugurating Device</u>:

Inauguration for technical events needs to be creative with using any advanced technology. In this perspective AIET ECE students have developed wireless inugurating device using Aurdino and Bluetooth with which the guest can cut the ribbon by standing 5 to 10 mts distance.

(d) IoT Enabled Display Board:

The students of ECE department has developed IoT based display which is installed in the front entrance of the A block building. The scrolling text in the display can be monitored using WiFi app.

(e) **Lighting & Illumination Laboratory :**

The Department has established has Lighting and Illumination Lab win which faculty and students are involved in producing /manufacturing 9W LED bulbs and 20W LED tube lights. These LED lighting products are known for their energy efficiency, durability, and versatility, making them popular choices for various lighting applications. Conducting comprehensive tests on LED tubelights to verify their performance, efficiency, and adherence to safety regulations is also carried in the lab.

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