

Smart T-Shirt using ESP32

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Abstract: *This project introduces a Smart T-shirt, an innovative wearable technology designed to integrate IoT and mobile computing using an ESP32 microcontroller, voice recognition module, GPS, and a MAX7219 dot matrix LED display. The T-shirt is capable of dynamically displaying messages, animations, and real-time information on an LED matrix, controlled through voice commands, an Android app, or a web application. The ESP32 microcontroller serves as the central hub, processing inputs from the voice module and GPS while controlling the LED matrix. The GPS module tracks the wearer's location, allowing real-time updates to be viewed on a connected Android app or web platform. The MAX7219 dot matrix display enables scrolling or static messages to be shown on the T-shirt, offering both personalization and practical uses such as emergency messaging, navigation, or event promotions. The Android app and web application allow users to interact with the Smart T-shirt remotely. Users can send customized messages to the LED display, track location data, and issue voice commands. The system leverages the Wi-Fi and Bluetooth capabilities of the ESP32 to ensure seamless communication between the wearable device and the user interfaces.*

Keywords: Smart T- Shirt, ESP32, Voice Recognition Module, MAX7219dot matrix, LED Display

