

Rocket Game

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The background of the slide is a dark, atmospheric illustration. The top half shows a night sky filled with numerous small, white stars of varying sizes. A prominent, bright crescent moon is positioned in the upper right corner. The bottom half of the image depicts a dark, undulating landscape, possibly representing hills or waves, rendered in shades of deep blue and black. The overall aesthetic is serene and celestial.

Introduction

Introduction to the development of the game

Problem statement

Goal: Rocket Game Control System

Our main goal was to build a system that could manage a rocket game, allowing the player to control a rocket to avoid obstacles and collect points.

Enhancing Experience with Visual and Auditory Feedback

Another key idea was to provide visual and auditory feedback to enhance the gaming experience.

Challenges

Smooth Joystick Control

Implementing smooth joystick control for the rocket.

Real-Time Screen Updates

Ensuring real-time updates on the screen with minimal latency.

Intuitive User Interface

Designing an intuitive user interface on the TFT LCD.

Feedback Mechanisms Integration

Integrating feedback mechanisms like LEDs and a buzzer.

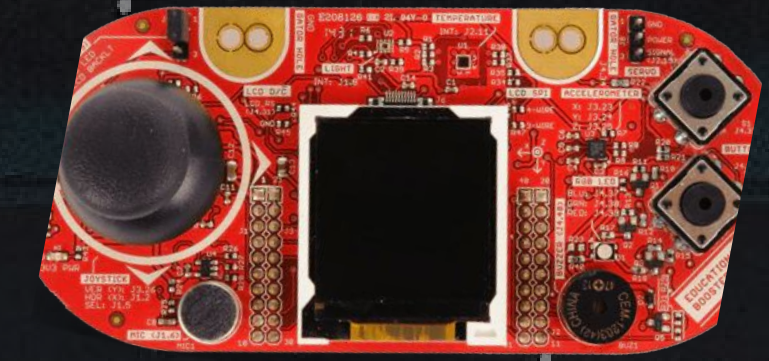
Reliable Communication Protocol

Establishing a reliable communication protocol between the MSP432 and the ESP32.

Hardware component

MSP432P401R Launchpad

Development board with high performance and low power MSP432P401R microcontroller.



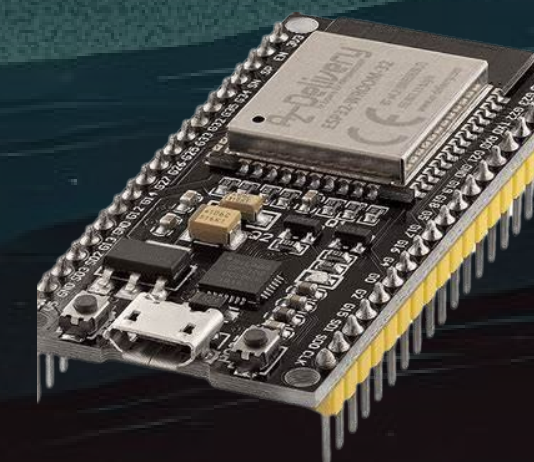
MSP432P401R BoosterPackMKII

Expansion module with joystick, buttons, accelerometer, and color LCD.



ESP32

Wi-Fi and Bluetooth-enabled microcontroller for IoT projects.

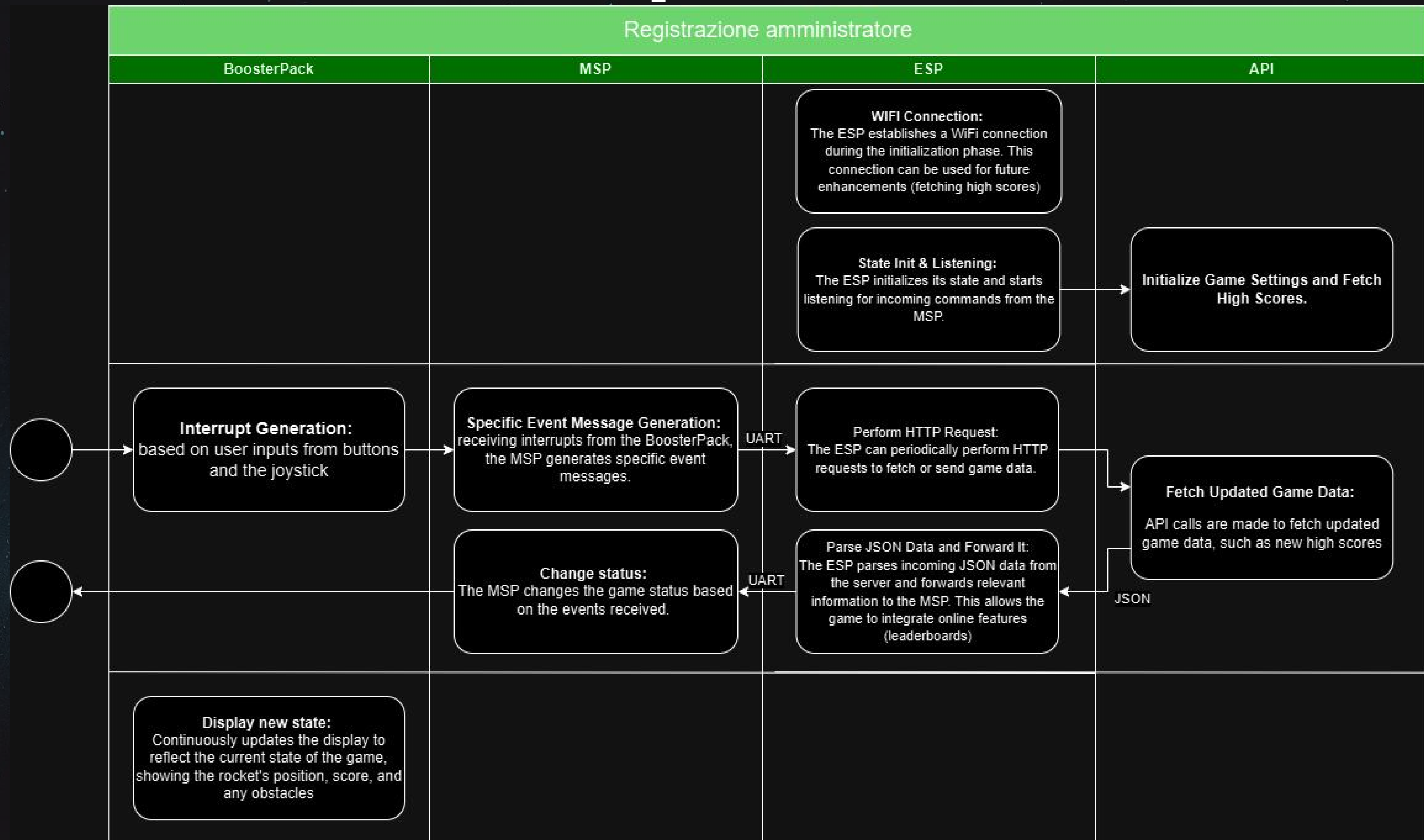


The background of the image is a dark, stylized night scene. It features rolling hills in shades of dark blue and black at the bottom. Above the hills is a deep blue sky filled with numerous small white stars and several larger, four-pointed starburst shapes. In the upper right corner, a bright, detailed crescent moon is visible. The overall aesthetic is serene and cosmic.

Development

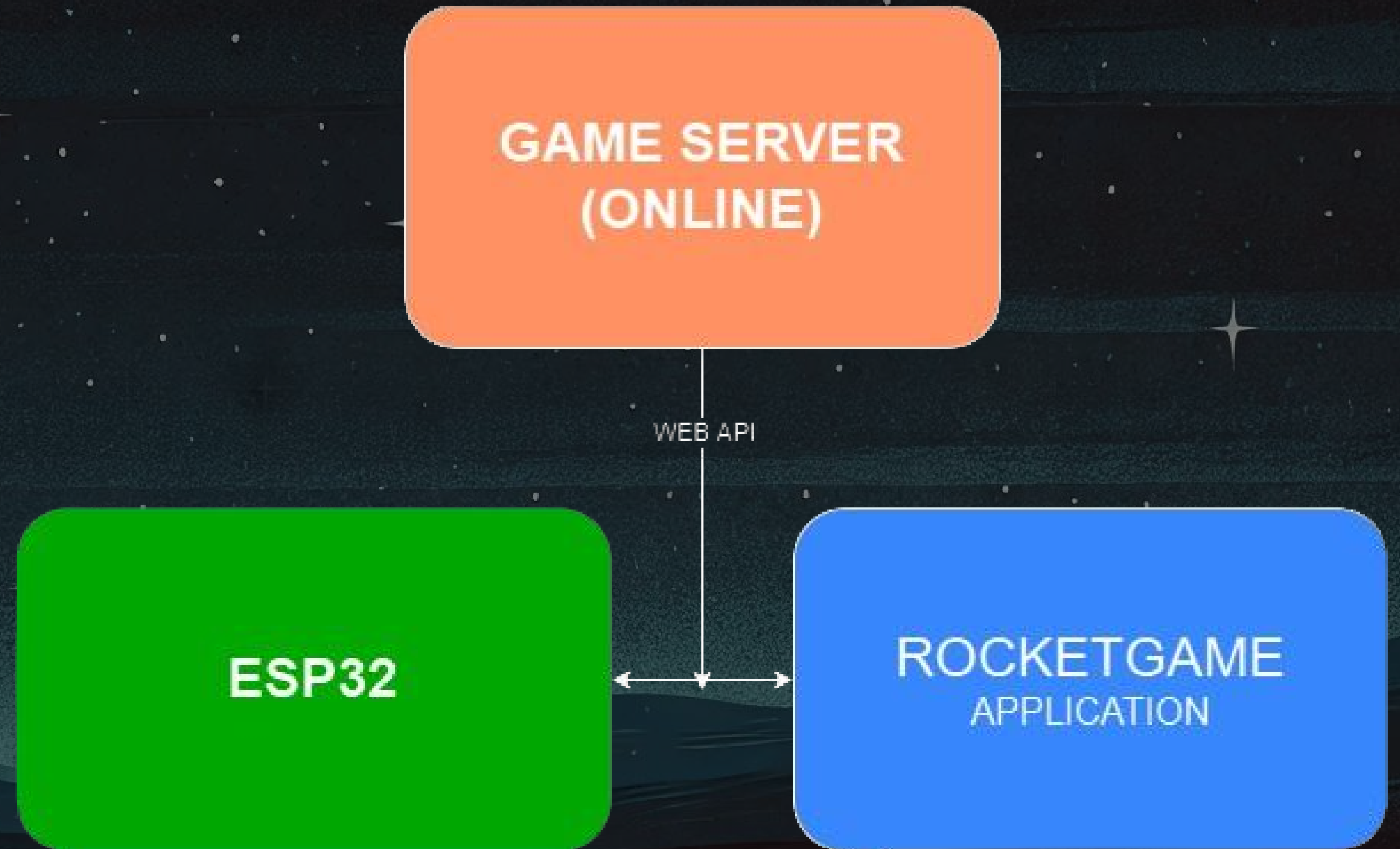
Let's talk about the development

Interrupt handler



Rocket game API

- Game Server Dev
- Fetching High Scores
- HTTP to use the APIs
- Parsing JSON Responses



ESP Development

Connection

Connecting to WiFi.

Score tracking

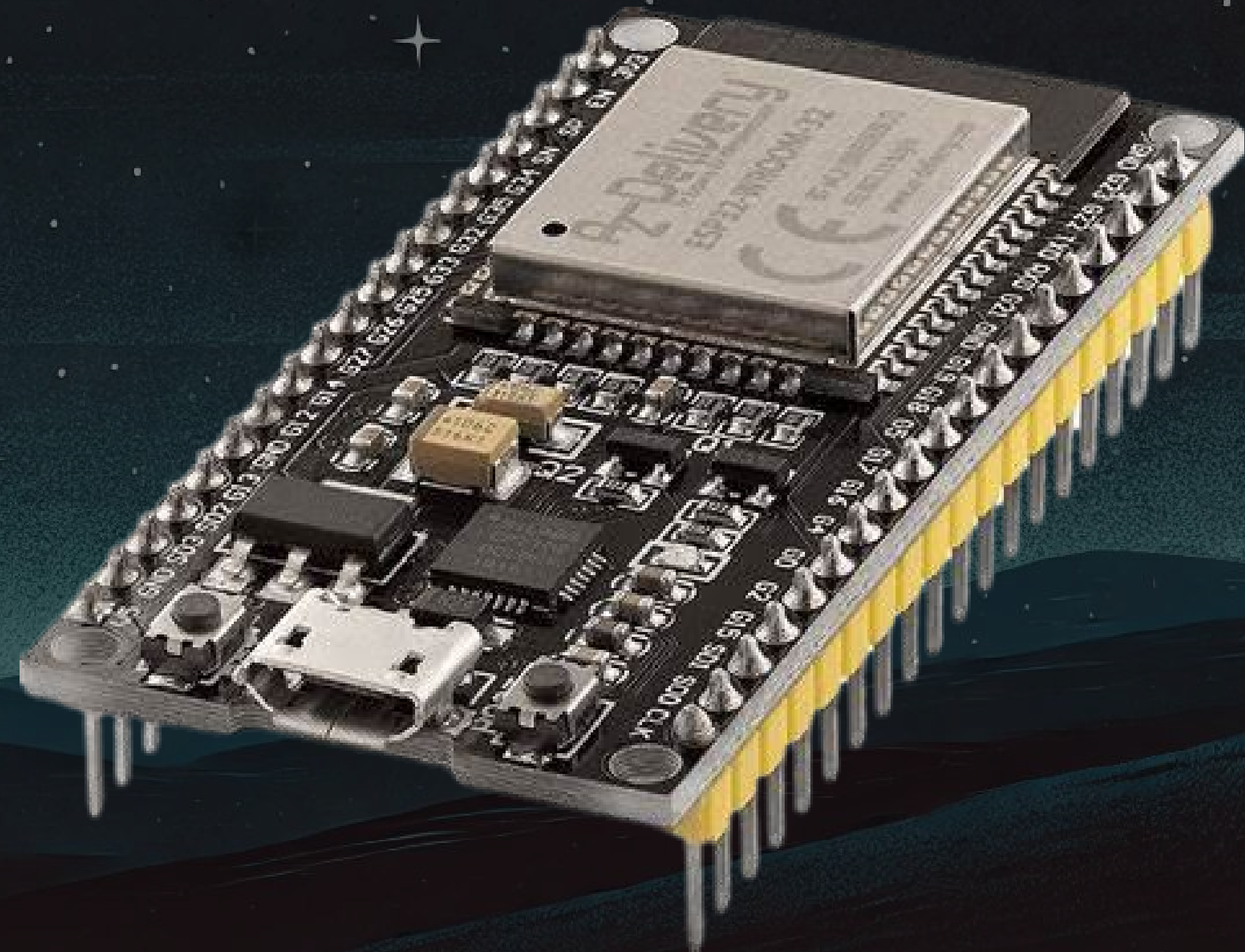
Making HTTP requests for potential score tracking.

JSON responses

Parsing and filtering JSON responses.

Sending data

Sending data through UART to MSP.



Sending data

MSP Development

ADC Interrupts

Setting up interrupts with ADC.

Joystick

Implementing joystick control.

buttons

Handling user push buttons.

LCD Color

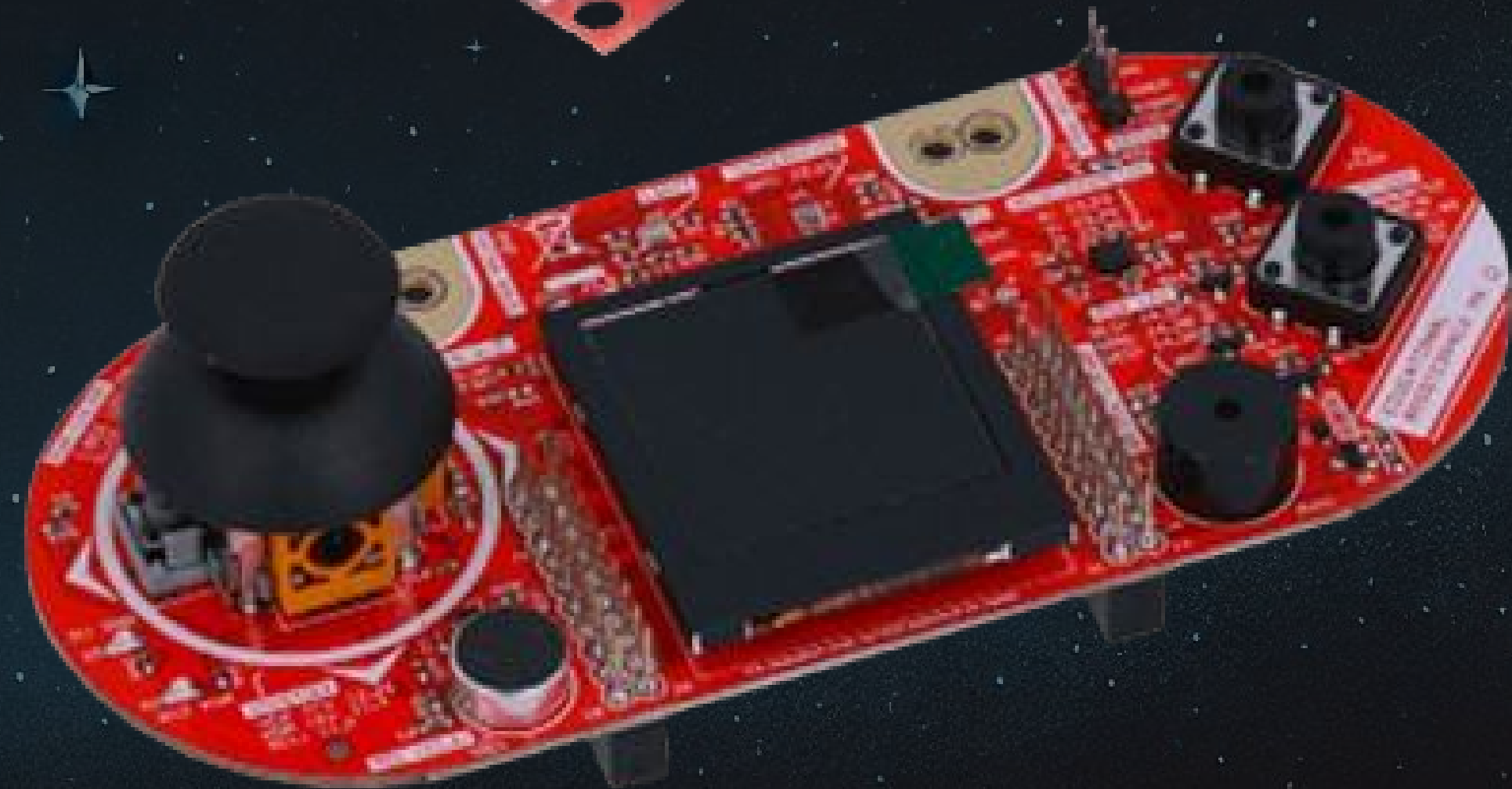
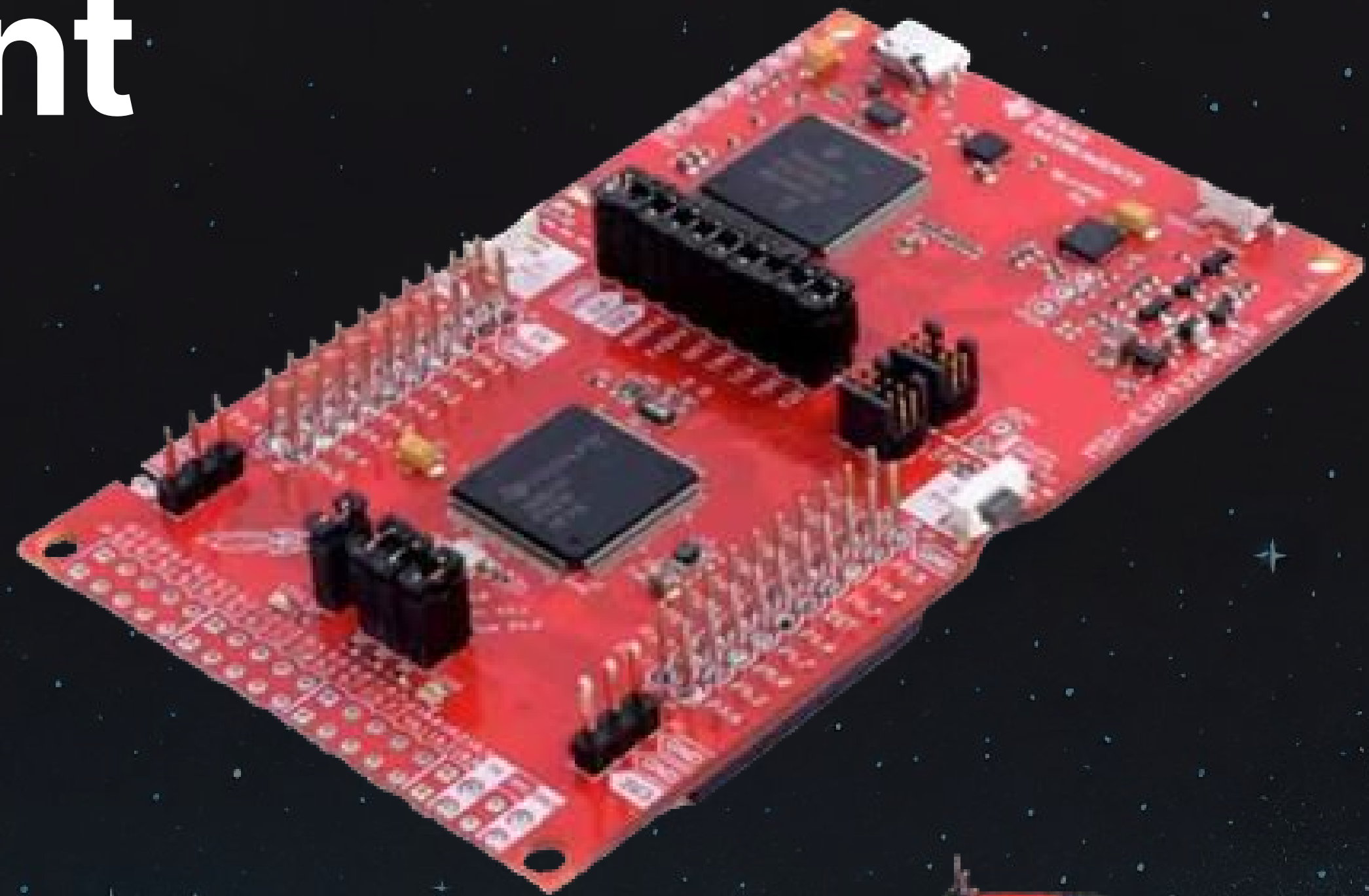
Managing the color TFT LCD.

UI Design

Designing UI on the LCD screen.

ESP Integration

Integrating responses from ESP.





Features

The features of the game

Actions in the game

Joystick

Left/Right Movement:

- Function: Moves the rocket left or right to avoid obstacles.

Buzzer

- Function: Provides auditory feedback during important events, such as the start of the game, game over, or obstacle avoidance.

Button S1

- Function: Starts the game from the welcome menu or restarts the game after a Game Over and pause the game

Leds

Red LED:

- Function: Indicates Game Over.

Green LED:

- Function: Indicates that the game is running and the system is ready.

