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# "RIVER OTTER TRACKING SYSTEM"


PRESENTED BY

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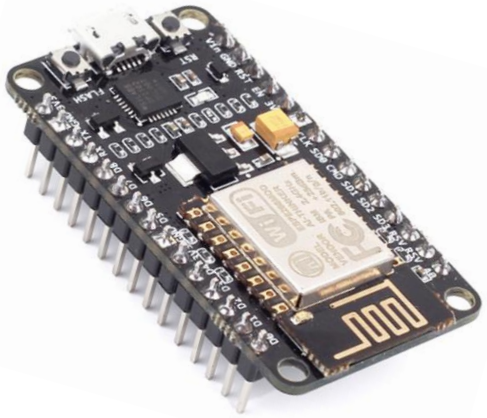
# INTRODUCTION

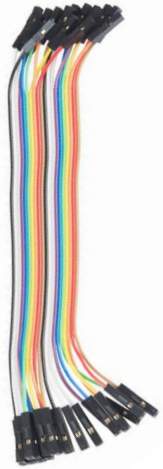
- **Introduction to the River Otter Tracking System**
- Title: "River Otter Tracking System: Protecting Wildlife with IoT"
- In this project, we have developed a sophisticated River Otter Tracking System, which stands as a prime example of Internet of Things (IoT) technology applied for environmental conservation.
- **Primary Goal: Tracking River Otters:**
- The primary goal of this system is to track the movement and precisely determine the location of river otters in their natural habitat. By doing so, we gain invaluable insights into their behavior, migration patterns, and preferred habitats.
- **Significance for Wildlife Conservation and Research:**
- The significance of this project cannot be overstated. It plays a pivotal role in wildlife conservation efforts by providing researchers and conservationists with real-time data on the activities of river otters. This data empowers us to make informed decisions and implement measures that protect these remarkable creatures and their ecosystems.

# COMPONENTS REQUIRED



ESP8226 MODULE

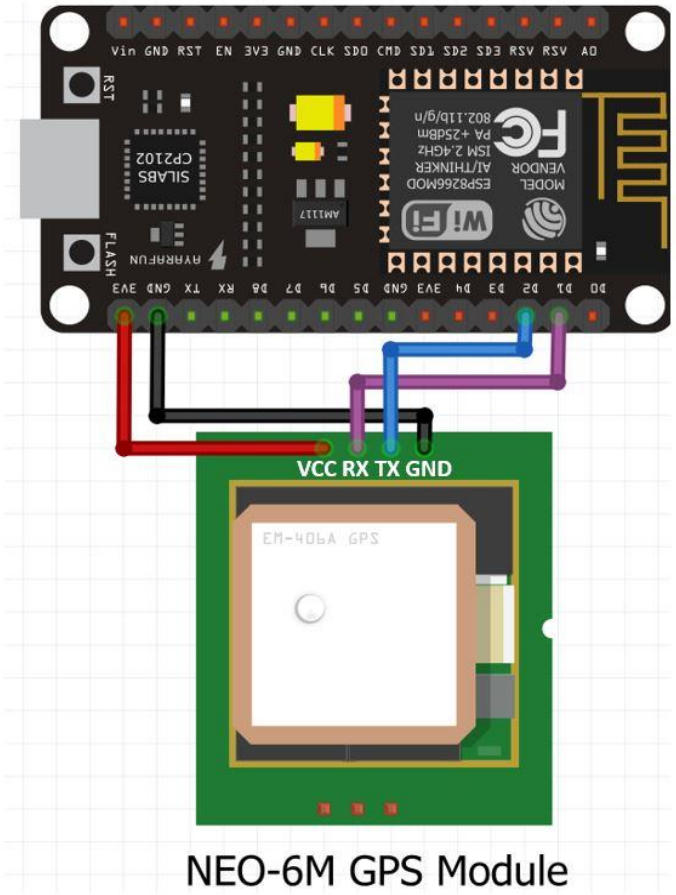
NEO 6M GPS MODULE



JUMPER WIRES


9V BATTERY

# CIRCUIT DIAGRAM



# WORKING OF THE RIVER OTTER TRACKING SYSTEM

- **GPS Data Collection**: GPS module gathers latitude and longitude data.
- **Geofencing**: A virtual boundary is defined within the otters' habitat.
- **Location Processing**: ESP8266 processes GPS data for real-time coordinates.
- **Geofence Check**: The system checks if otters are inside or outside the boundary.
- **Web Server Communication**: The ESP8266 serves as a web server.
- **HTML Response**: Real-time otter location, date, time, and geofence status are sent as HTML responses.
- **Client Interaction**: Users can monitor otters' location through a web browser.
- **Geofence Status Handling**: Custom actions can be triggered when otters enter or leave the boundary.
- **Continuous Operation**: The system continually updates data, aiding wildlife research and conservation.

# IMPLEMENTATION AND WORKING

- **Implementation**:
  - The system is built around an ESP8266 microcontroller and utilizes a NEO-6M GPS module for precise location data.
  - Geofence boundaries are predefined within the river otters' natural habitat.
  - The ESP8266 operates as a web server, facilitating real-time data access.
- **Working**:
  - The NEO-6M GPS module collects accurate latitude and longitude coordinates of the river otters.
  - Geofence checks determine if the otters are within the predefined boundaries.
  - HTML responses, containing the otters' real-time location, date, and time, are served by the ESP8266.
  - End-users can effortlessly monitor the river otters' location via any web browser.

# APPLICATION AND USE CASES

- **Applications:**

1. **Habitat Monitoring**: Track river otters in their natural habitats.
2. **Conservation & Research**: Support otter conservation and scientific research.
3. **Environmental Protection**: Identify and mitigate threats to otters and their habitats.

- **Practical Uses:**

1. **Geofencing**: Define protected otter habitats with geofences.
2. **Behavioral Studies**: Analyze data for behavior research..
3. **Conflict Resolution**: Manage conflicts with fisheries or urban areas.
4. **Data Sharing**: Collaborate with other researchers.
5. **Adaptive Management**: Adjust conservation strategies based on real-time data.
6. **Public Engagement**: Involve the community in otter protection.

# CONCLUSION

- In conclusion, our River Otter Tracking System, driven by the ESP8266 and NEO-6M GPS module, serves as a powerful tool for monitoring river otters in their habitats. This code-based solution facilitates wildlife conservation efforts by providing real-time location data, aiding scientific research, and enabling informed decisions for habitat preservation. Moreover, it fosters community engagement, promoting awareness and involvement in river otter protection. As we harness technology to safeguard these remarkable creatures, we exemplify our commitment to environmental stewardship and the coexistence of otters within their ecosystems.