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BORDER ALERT SYSTEM: MAXIMIZING SAFETY FOR FISHERMAN

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ABSTRACT:

The goal of the Fisherman Border Notifications program is to make coastal fisherman in India feel more secure by alerting them in real time about border security, piracy, and other possible dangers. Using cutting-edge tech and a community-based approach, the initiative builds a system to keep an eye on fisherman and warn them of any dangers. Buoys disseminate the signal at a radio frequency that is ideal for small-scale, line-of-sight communication across water. Unintentionally violating their boundary boundaries decreases the probability of encountering the Coast Guards of adjacent nations, particularly Sri Lanka, which is a significant topic that this research addresses. India's fishing community stands to gain greatly from this new strategy, which might lead to improved living conditions and general welfare.

Keywords— Arduino UNO, GPS, GSM, BUZZER

Introduction

A fisherman's skill in navigating large bodies of water is crucial to the success and security of those who rely on fishing as a profession or pastime. This technology is comprised of many equipment designed for use in marine environments, including global positioning systems (GPS) units, nautical charts, and specialist software. All of these parts contribute to the overall success of fishing in several ways. Being able to determine their precise position allows them to discover the most ideal fishing spots. Avoiding collisions with other boats is one of the primary goals of this kind of navigation system. By making fishing safer and protecting marine resources, this technology is essential to the growth of a sustainable fishing sector. The best anglers are always ready for

sea changes because real-time weather, tide, and other relevant information updates are conveniently accessible. However, because to the immense size and absence of land routes, maritime navigation is a complicated discipline that differs greatly from road transportation. The Global Positioning System's extensive steering capabilities and accurate timing services make it a valuable tool. Maritime, oceanic, yacht, and ship tracking, as well as border protection, are just a few of the many uses for technologies developed for the Global System for Mobile Communications. The significance of navigation systems is emphasized in coastal countries since fishing is the main source of livelihood for these nations. This is because these nations are located on peninsulas, islands, or have marine boundaries. If the marine industry is serious about improving its sustainability, efficiency, and safety, it must use modern navigational systems such as GPS and GSM. This includes the fishing business. In the long run, this will benefit fishermen and the whole coastal community.

LITERATURE SURVEY

Using Image Moment Feature Anomaly for Automated Product Boundary Defect Detection [1]. The authors of this work are Yeping Peng (ieee), Songbo Ruan (Guangzhong Cao), Sudan Huang (Ngaiming Kwok), and Shengxi Zhou (IEEE). Critical components of the power distribution pipeline are electric distribution cabinets, which are the subject of this research. An important part of manufacturing is the identification of surface defects. Not only does it ensure high-quality products, but it also influences how people perceive the brand. Metal cabinet edges, in particular, are more likely to sustain damage than those of other materials. [2]. An Algorithm for Tracking Multi-Feature Fusion Using Self-Associative Memory Mechanis Tao Shi, Hongge Ren, Jingjing Qiao, and others The research proposes a multifeatured fusion tracking technique that updates the kernelized correlation filtering approach with a self-associative memory learning mechanism to fix the issues of unstable single features, target reemergence, and short-term

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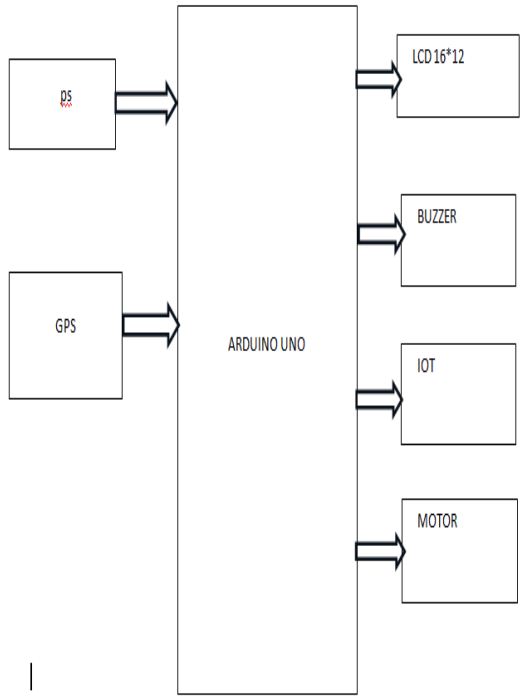
disappearance. To improve feature robustness and gather more target features, fuse color features, directional gradient histogram features, and scale invariant features instead of single features while extracting features.

Methodology

working

Developing a comprehensive, user-friendly tool tailored to the needs of fishermen is one possible project for a fisherman navigation system. This system would integrate many technologies and data sources to assist fishermen in safely and successfully navigating the seas. Tools such as GPS-based position monitoring, up-to-the-minute weather reports, and detailed fishing zones, hazards, and local legislation maps would be part of the package. Sonar and underwater photography might potentially be included into the system to aid fishermen in locating and tracking schools of fish.



Block diagram

Arduino uno

A microcontroller board based on the Atmega328, the Arduino Uno is described in the datasheet. A 16 MHz crystal oscillator, 6 analogue inputs, 14 digital input/output pins (including 6 PWM outputs), 1 USB port, 1 power connector, 1 ICSP header, and 1 reset button are all part of it. All you need is a USB cable, an AC-to-DC converter, or a battery to get it going; it comes with everything you need to support the microcontroller.
Because it forgoes the FTDI USB-to-serial driver chip, the Uno stands apart from all previous boards. In its place, you'll find the Atmega8U2 configured to convert USB to serial. "Uno" signifies "One" in Italian and is chosen to commemorate the impending release of Arduino 1.0. Going forward, the Uno and version 1.0 will serve as the reference versions of Arduino. See the index of Arduino boards for a comparison with earlier generations; the Uno is the newest in a series of USB Arduino boards and the platform's standard model.

LCD

In front of a light source or reflector, a thin, flat display device called a liquid crystal display (LCD) arrays a large number of color or monochrome pixels. Pile of liquid crystal molecules held aloft by two transparent electrodes and two polarizing filters, whose polarity axes orthogonal to one another, make up each pixel.
If there weren't liquid crystals interposed, one would block the other from light. Light that enters one filter is able to pass through the other because the liquid crystal bends its polarity. A program's ability to communicate with the outside world depends on its input and output devices, which in turn rely on human communication. An LCD display is a typical accessory for controllers. The 16x1, 16x2, and 20x2 LCDs are among the most popular types of displays that are attached to the controllers. This equates to sixteen characters on a single line. The first set has 16 characters on each line while the second set has 20 characters on each line.

ESP8266 Wi-Fi Module

This project revolves on this. Given that the project relies on WIFI control of appliances, the module is a crucial part of it. This little board has an amazing MCU (Micro Controller Unit) integrated, which gives the possibility to control I/O digital pins via simple and almost pseudo-code like programming language.

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The ESP8266 Arduino compatible module is a low-cost Wi-Fi chip with full TCP/IP capability. The Chinese company Es press if Systems is situated in Shanghai and makes this gadget. In August 2014, this chip made its debut in the ESP-01 version module manufactured by the third-party company AIThinker. The MCU can establish basic TCP/IP connections and connect to WiFi networks with the help of this little module. In his Many hackers and tech enthusiasts were interested in exploring and using it for a wide range of projects because to its tiny size and very inexpensive pricing (1.7$ to 3.5$). Since it has been so successful, Espressif has released other variants with varying proportions and technological specs. Among the following is the ESP32. Numerous projects and applications, such as home automation, may be found online.

RELAYS:

Many household and commercial equipment, as well as industrial control systems, make use of electrically controlled switches called relays. By using a relay, two independent voltage sources may be isolated from one another; in other words, a little quantity of voltage or current on one side can manage a big amount of current or voltage on the other side, and vice versa.

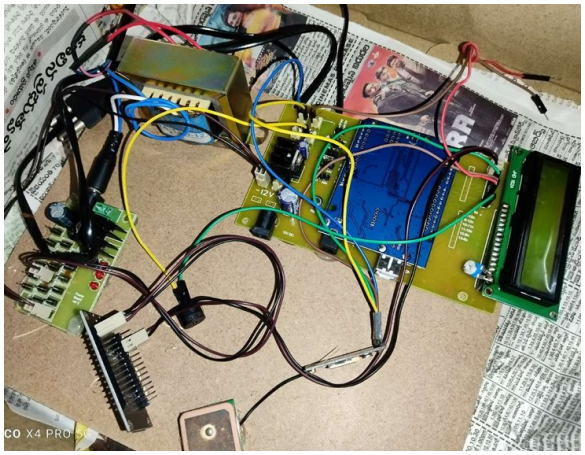
Bluetooth Module

Wireless headsets, gaming controllers, mice, keyboards, and a plethora of other consumer electronics make use of it. The range may be as little as less than 100 meters, depending on factors such as the transmitter and receiver, the weather, and terrain and metropolitan areas. One may construct a wireless Personal Area Network (PAN) using the IEEE 802.15.1 defined protocol. It transmits data wirelessly using frequency-hopping spread spectrum (FHSS) technology. To talk to other devices, it use serial communication. The USART is the means by which it exchanges data with the microcontroller.

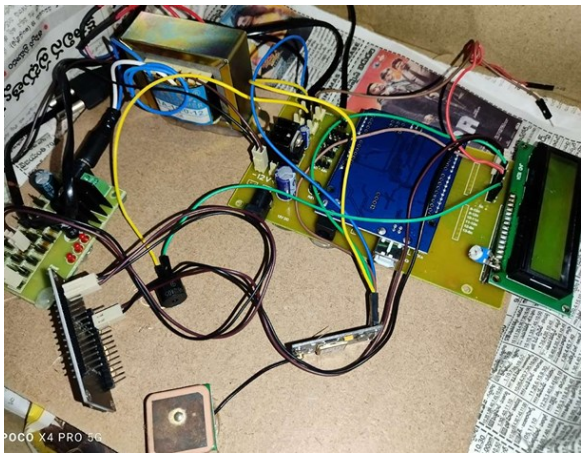
CONCLUSION

The FishermanNavigation System is a significant advancement in marine technology. Improving fishing efficiency and safety simultaneously, this state-of-the-art technique aids in environmentally responsible water management. It reduces the risks associated with fishing and provides fishermen more ability to make educated choices by providing them with up-to-date information on fish movement patterns, weather, and other dangers. Overfishing is a major problem in the ocean, but the Fisherman Navigation System may help fishermen be more careful and precise, which in turn protects marine ecosystems. We might be losing our irreplaceable marine environments and a brighter future for fisherman if this technology doesn't improve in the future.

Results



Output 1



Output2

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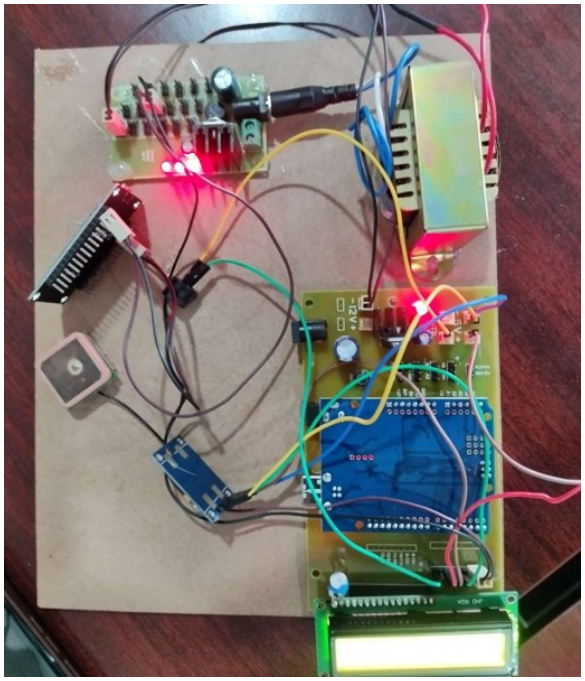

Final output

REFERENCES

[1]. M. Sivaramaganesh /International journal of innovative research inelectrical, electronics, instrumentation and control engineering vol. 2,issue 3, March 2014.
[2]. K.Prabakaran , A Novel Approach of Geo fencing and Geo taggingSystem
[3]. T. Zhang, S. Liu, N. Ahuja, M.-H. Yang and B. Ghanem, "Robustvisual tracking via consistent low- rank sparse learning", Int. J.Comput. Vis., vol. 111, pp. 171-190, Jan. 2015.
[4]. Z. Kalal, K. Mikolajczyk and J. Matas, "Learning- tracking-detection",IEEE Trans. Pattern Anal. Mach. Intell., vol. 34, no. 7, pp. 1409-1422,Jan. 2018.
[5]. L. Bertinetto, J. Valmadre, S. Golodetz, O. Miksik and P. H. S. Torr,"Staple Complementary learners for real- time tracking", Proc. IEEEConf. Comput. Vis. Pattern Recognit. (CVPR), pp. 1401-1409, Jun.2016.
[6]. Manikandan et al., Bus Identification System For Visually ImpairedUsing Zigbee Technology in IEEE International Conference onCommunication, Computing and Internet of Things, 2022
[7]. G Premalatha et al., Implementation of VLSI Based Efficient LosslessEEG Compression Architecture using Verilog HDL, in Journal ofPhysics: Conference Series. Vo.1964 No.6 2021
[8]. Manikandan et al., ESP 8266 Indoor Based Localization system in2023 Intelligent Computing and Control for Engineering and Bussinesssystem , 2023