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# OFFLINE NAVIGATION SYSTEM FOR FISHERMEN'S TO AVOID BORDER CROSSING CONFLICTS

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***Abstract:*** Sea foods and goods had become one of the major life source and nourishment thing in this advanced modern world whereas a countries nourishment is based on both agricultural and sea goods. Fisher men who put their life on danger to provide sea goods to the common people where they face many problem such as poor navigation through sea etc. During the process of collecting sea goods these people face a major issue of crossing the borders. Each country forced strict orders and rules to not to cross the borders and the fishermen are allowed to do fishing only on their nations permitted areas. Many fishermen lost their life where they knowingly or unknowingly cross these borders and get arrested or sentenced to death. This is because of the poor navigation systems provided by our nation to these people. Some of the officially available efficient navigation systems are high of cost and it is not affordable by most of the fishermen. Implementing a navigation system with advanced features like asynchronous network connectivity and offline features within their mobile device or Tablet will help to overcome thisproblem

***Index Terms - PAW Server, Asynchronous Network, GPS.***

## I. INTRODUCTION

**Almost 80% of people started to use smart phones and tablets which lead to a way to patch a solution to this issue. Building an offline system which can be hosted within their mobile device will cut the term network connectivity and all sorts of cost depends upon it. Providing it as an open source service will help almost all the people who struggle to afford efficient navigation systems. The project concerns on creating an offline system which works on online as well to increase the accuracy as well as the efficiency. Users using this system need to do an one time location synchronization with the application where they will have a clear cut information of the border details before starting from the coast itself. The system will synchronize with the network whenever network availability is there and also plots the path of the vessel. So that whoever using the system will have a clear cut image of where they are sailing and helps them to avoid crossing the borders.**

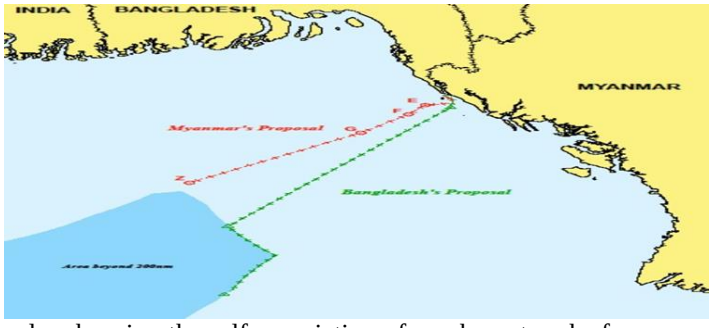
## II. PROBLEM DEFINITION

Information on the troubles, expenses, and regional issues encompassing fishing networks appears to be urgent to accomplish feasible improvement objectives in marine and beach front zones. Notwithstanding, such information isn't generally accessible, adequate, or even recognizable. The sea bob-shrimp limited scope fisheries in the shallow waters of the State of São Paulo, in South-eastern Brazil, assumes a significant part in beach front jobs, giving social and monetary advantages to various nearby networks and an exceptional wellspring of provincial fish. Around 4000 fish-laborers produce supplies for cafés, fishmongers and grocery stores in waterfront towns with around 2 million occupants. All things considered, harbor and maritime securing, the development of pipelines, sewage removal, disputable occasional terminations, and marine spatial drafting have all confined the movement.

A regional methodology is here proposed to look at the course of events of vertically executed laws/guidelines that may have brought about a decline of domains once in the past accessible to those fisheries, joined by an exhaustive standpoint of the general approach setting. The shrinkage of fishing domains has been confirmed and the sort of regional misfortune recognized doesn't appear to be understood in cost investigation of fisheries, biological system administrations, or remuneration. Top-down strategies and a misconception of ecological moderation programs seem to have been adding to expanding clashes, mining multi-partner cycles and social equity rather than the ascendant monetary development of both the oil and gas and port enterprises.

While monetary and political pressing factors appear to shape current fishing domains, the acknowledgment of the variety of interests and force deviations in seaside zones guides the focus toward an essential, regularly disregarded, measurement of

social reality. Institutional difficulties and suggestions, for example, regional use rights and lawful advancements are




examined, enhancing the self-association of nearby networks for a successful cycle of adjusted force both inside and outside lawful marine secured zones .The extension of enormous scope businesses inside fishing domains and the environmental decay of the water have set off warmed questions between undertakings, fishing networks, and the state. This investigation uncovers a gauge of the fishing domains some time ago accessible to the fisheries that have been decreased because of access limitations, few particular reasons past preservation.

It additionally uncovers a not frequently perceived state job that forces limitations on the limited scale fisheries area yet appears to offer no partner of any sort what over for the straightforwardly or by implication decline in pay. The investigation has been restricted to the regional viewpoint, for example the proper region limitations forced on fishing itself. Subsequently, if ecological medical conditions that likewise produce financial misfortunes for fishing networks, for example, the nature of seawater and seabed are considered, the possible effect on fishing regions can be a lot bigger.

## III.REQUIREMENT ANALYSIS

The navigation system allows mariners to navigate, quantify speed, and determine direction in the quickest and most precise way possible. This improves the safety and productivity of mariners all over the world. It is important in marine navigation for the ship's officer to know the vessel's position while in open sea and also in congested harbors and waterways. While at sea, precise location, direction, and heading are required to ensure that the vessel arrives at its destination in the fastest, most cost-effective and timely manner possible. When the vessel departs or arrives in port, the need for correct location information becomes ever more important. Manoeuvring becomes more difficult as a result of vessel traffic and other waterway risks, and the risk of collisions increases.

### 3.1 Hardware Requirements

The hardware specifications should serve as the basis for a contract for the system's installation, so they should be comprehensive and reliable. They are seen as a starting point for device architecture by software engineers.

- Hard disk : 120 GB
- Monitor : 15’ color with VGA card support
- Ram : Minimum 256 MB
- Processor : Pentium iv and above (or) equivalent
- Processor speed : Minimum 500 MHZ

### 3.2 Software Requirements

The device design is defined by the programme specifications. It can include a requirement description as well as a requirement specification. It's a list of things the machine should do, not how it should do them. The software specifications serve as a foundation for the creation of the test plan.. It can be used to estimate costs, schedule project meetings, complete assignments, and keep track of teams and their success in the production process.

- Operating system : Windows Any.
- Languages : Java , Python.
- Markup language : xml
- Database : PHP

## IV.MODULES

By facilitating concurrent growth of various parts of the code, a modular architecture decreases complexity, facilitates transition (a key feature of programme maintainability), and results in simpler deployment. Since functions can be compartmentalized and interfaces can be streamlined, software with efficient modularity is easier to build. Modularity is embodied in software design, in which software is separated into individually designated and addressable elements called modules, which are then combined to meet problem specifications.

### 4.1 Border Plotting System Module

The Border line where the concerned user is not supposed to cross is plotted with the help of “Hierarchical Path Algorithm”. The set of scripts at back end will plot the line in the Real time map in order to verify the ETD cross matrix between the vessels current location and the concerned borders.

Figure (1): Border Plotting Module

### 4.2 Asynchronous Network Connectivity Module

Asynchronous networks are made up of a collection of processes that connect with one another through a networking subsystem. The variant of this model that is most often encountered is as follows: this communication is point-to-point, using send and receives actions asynchronously in order to maintain the efficiency of the offline subsystem.

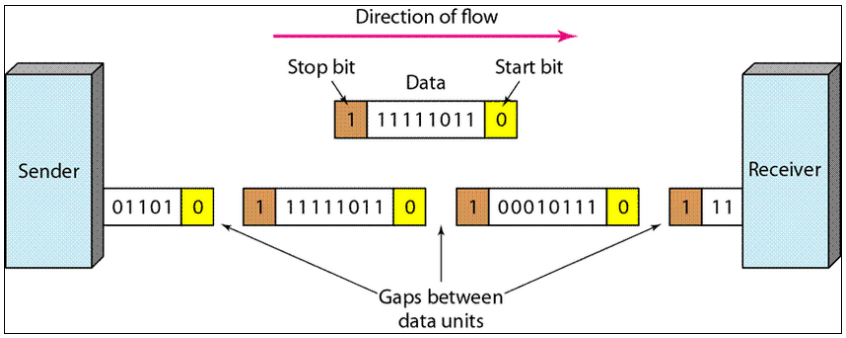



Figure (2): Asynchronous Transmission.

### 4.3 Paw Server Integration

Paw Server plays a major role here in order to establish a complete offline server system. PAW is open source and it can be installed in almost all the currently used mobile devices. The final application will be hosted in the users current device itself.


Figure (3): Paw server.

### 4.4. Boat / Ship Position Identification Module

The major cost for implementing the positioning system used nowadays is reduced to absolute zero by consuming the GPS feature comes with mobile devices. One time synchronization with internet is required in order to start the position plotting in our module.


Figure (4): Vessel identification using GPS.

### 4.5 User Management Module

A User management dashboard is implemented in order to keep track of the user and also used to collect the travel data in order to increase the overall efficiency of the application.

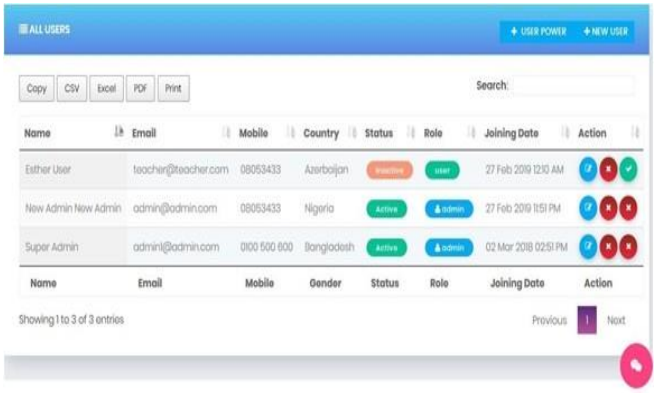



Figure (5): User management dashboard.

### 4.6. Alert Mechanism Implementation For Fishermen

Any biological or technological device deployed by a person or community to warn of a potential threat is known as an alert system. Its aim is to allow the alert system's deployer to anticipate the threat and take appropriate action to minimise or stop it. Residents in urban cities, states, and around the country hear mobile phone clicks or bells while an emergency warning is broadcast. Wireless Emergency Alerts, Emergency Warning Systems, and Opt-In Alert Systems are the three main alert systems available. EAS warnings are broadcast on local and national television and radio stations. The Wireless Emergency Systems are like Amber Alerts, Silver Alerts, Blue Alerts etc. The National Weather Service of the National Oceanic and Atmospheric Administration will send these warnings via FEMA. The mechanism for opt-in notices varies by country, but the reasons for which citizens are alerted are the same.

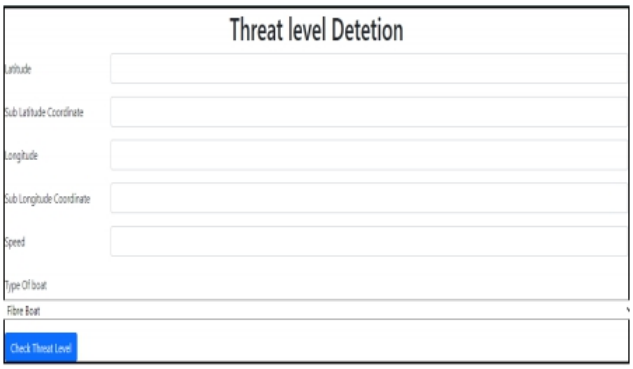



Figure (6): Alert module

### 4.7 Web Middleware Implementation with Android

A User Management dashboard is introduced in order to manage the users and also to achieve cloud processing of video data as an additional feature. In the meantime the data from different users can be used to create a data set whenever anomaly event happens and this can be used to increase the efficiency of the application. Each user can create their user id and password for their account while installing this system and their surveillance camera data will be stored in their account cloud storage where they can retrieve and see the required data whenever it is needed. Android Web View is a device component for the Android operating system (OS) that enables Android users to access web content directly inside their apps. There are two ways to view web content on an Android device: though a traditional web browser or through an Android application that includes Web View in the layout. We can use the Web View library to create a Web View class instance if a developer needs to add browser features to an application. this effectively embeds a browser within the app, allowing it to make web pages and run JavaScript.. Web View's powerful because it not only provides the app with an embedded browser; it also enables the developer's software to communicate with other web sites and applications. Previously, Web View was closely coupled with the operating system, and the component would only be upgraded when the operating system was modified. Web View was removed from the main operating system in Android 5 so that updates to Web View could be delivered via the Google Play app store. This is good news for 20 end users whose Android devices run newer versions of the operating system. If a flaw is discovered in the Web View component, Google will release a patch, which end users can download and update from the Google Play store. Google, on the other hand, no longer issues updates for Android versions 4.3 and later. Google advises that all Android users run the most recent version of the operating system and upgrade Web View when requested to defend their devices from threats that can take advantage of Web View's capabilities.

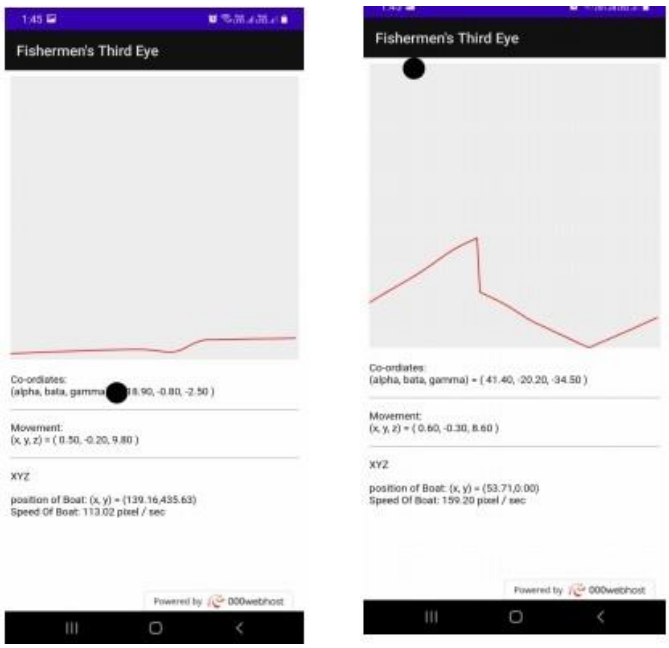



Figure (7): Mobile interface.

## V. ARCHIETECTURE DIAGRAM

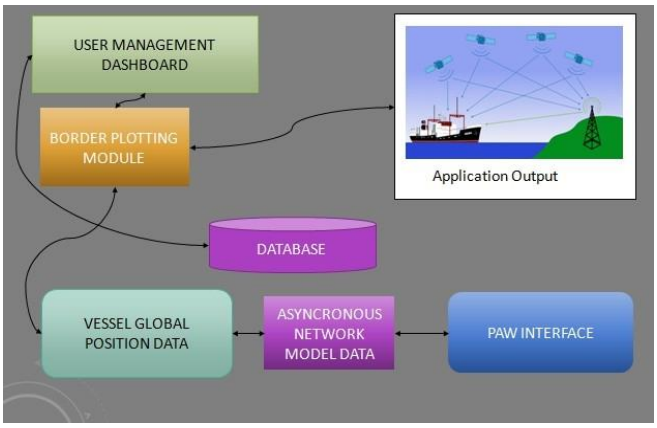



Figure (8): Architecture diagram.

## VI. CONCLUSION

Thus, the developed web application does not allow the fishermen to cross the border by mistake. With the simple circuitry and the use of in build sensors in Smartphone makes the module a low cost product, which can be purchased even by every fisherman. This system provides an accurate and a precise value of the latitude and longitude. The process of routing the fishermen is more efficient with the help of this system which have been implemented.

## VII. FUTURE ENHANCEMENT

A Differential Global Positioning System (DGPS) can be implemented which is an enhancement to the Global Positioning System (GPS) which provides improved location accuracy, in the range of operations of each system, from the 15-metre (49 ft) nominal GPS accuracy to about 1–3 centimeter (0.39–1.18 in) in case of the best implementations. Voice or audio processing can be done that are programs on digital devices that listen and respond to verbal command.

## VIII. ACKNOWLEDGEMENT

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