SMART SAFETY ASSIST FOR DRIVERS (SAD)

STUDY PHASE

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REQUIREMENT ANALYSIS

Requirements analysis, also called requirements engineering, is the process of determining user expectations for a new or modified product. These features, called requirements must be quantifiable, relevant and detailed in software engineering, such requirements are often called functional specifications. Requirements analysis is an important aspect of project management. Requirement analysis is critical to the success of a development project. Requirement analysis phase is where the project life cycle begins. This is where you break down the deliverable in the high-level Project Charter into the more detailed business requirements. It is also the part of the project where you identify the overall direction that the project will take through the creation of the project strategy documents. It takes into account all the tasks that determine the needs for the project. Gathering requirements is the main attraction of the requirement analysis phase. The process of gathering requirements is usually more than simply asking the users what they need and writing their answers down.

EXISTING SYSTEM

The existing system for drivers assist is very traditional. In a road trip the driver will face different issues the most faced issue is the drowsiness or the fatigue while driving for overcoming these issues the drivers use pills, chemicals ,water etc. or there will be a co passenger who monitors and alert the driver from fatigue. The traffic ahead is not known to the driver in the existing system and in case of an accident or emergency the recovery is very slow and the recovery is done only after another set of people or vehicle identify the emergency .after getting the information and location about the accident or emergency for others the recovery team move into action .

Limitations of existing system

- Need of a co drive.
- Fatigue or drowsiness is identified and notified manually
- When the driver and co-driver are in fatigue then there is no one to notify
- Negligence of fatigue.
- Immediate traffic is unknown.
- In the case of an accident , there is no way to reach out for the recovery team directly.

- Driver safety is least considered
- Emergency recovery is to slow and it may cause causalities

PROPOSED SYSTEM

Smart safety assist for drivers (SAD) is the proposed system. SAD is an integrated system in which drowsiness can be easily detected by image processing technique , immediate traffic ahead is provided to user by density analysis of the traffic ahead and a third party emergency assist is provided with accurate location and details in case of an emergency.

When the driver is detected with fatigue or drowsiness an alert in the form of an alarm is generated, and a report of fatigue is sent to the secondary number via sms . This will increase the safety of the driver. The immediate traffic is predicted and sends to the driver by analyzing the density of vehicles the road using the surveillance cameras. In case of an emergency the driver can simply send an SOS and an emergency recovery team will be assisted soon .this emergency team will get the exact location and details about the diver and the recovery will be fast and easy. Drowsiness detection and immediate traffic prediction will be notified in the android app used by the driver and the emergency recovery team will be notified with a web application.

Advantages

- Fatigue or drowsiness is can be detected easily
- The drowsiness alert will warn the driver.
- Immediate traffic is predicted and the driver can redirect the route, this saves time.
- Driver can send emergency request
- Recovery can be accurate and fast
- This system can reduce the accident rates.
- Very low cost
- No modifications needed.
- The system is easy to use.

REQUIREMENT SPECIFICATION

FUNCTIONAL REQUIREMENTS

A functional requirement describes what a software system should do.

This application has the following functional requirements.

MODULES

TECHNICAL

- Identify density of traffic
- Predict result
- Monitor driver
- Capture frame
- Detect drowsiness
- Generate alarm
- Send message to secondary number

EMERGENCY TEAM

- Register
- Login
- View emergency request
- Locate user

USER

- Register
- Login
- View drowsiness alert
- Traffic prediction alert
- Set secondary number
- Send emergency request

NON-FUNCTIONAL REQUIREMENTS

Non-functional requirements place constraints on how the system will do. This application has the following nonfunctional requirements.

1. Privacy:

This system must support the admin/client/employee which is registering. They must login for their functions.

2. Security:

The system must support for security. This application support must offer security for user's login and data

3. Portability:

The Admin console is portable on any system.

4. Maintainability:

The system must support for maintainability. Every application will be maintained in future. So each system must support for maintainability

5. Response time:

The application must support for high response time.

ENVIRONMENTAL DETAILS

- Operating System : Windows 10 Any 32 bit or 64 bit platform
- Front End : Android, .Python
- Back End : MySQL Sever
- IDE : Eclipse or Android studio
  : Python 3.6 or above
  : PyCharm

FEASIBILITY STUDY

Feasibility is defined as the practical extent to which a project can be performed successfully. The objective of feasibility study is to establish the reasons for developing the software that is acceptable to the users, adaptable to changes and conformable to the established standards.

- The purpose of the study
- Identify the responsible users and develop an initial scope of the system
- Identify the current deficiencies in the user‟s environment.
- Determine the objectives.
- Determine whether it is feasible to automate the system and if so suggest some acceptable

option.

The key considerations involved in the feasibility analysis are :-

- Economic Feasibility.
- Technical Feasibility.
- Operational Feasibility.

ECONOMIC FEASIBILITY

Economic feasibility determines whether the proposed system is capable of generating financial gains for an organization. It involves cost incurred on the software development team, estimated cost of hardware, and cost of performing feasibility study and so on. The proposed system is economically feasible since the cost incurred for the development of the system produces long term gains.

Since the system is developed as part of project work, there is no manual cost to spend for the proposed system. Also all the resources are already available, it give an indication of the system is economically possible for development. This ongoing effort improves in accuracy at each phase of the system lifecycle. Hence the proposed system is economically feasible.

TECHNICAL FEASIBILITY

The system must be evaluated from the technical point of view first. The assessment of this feasibility must be based on an outline design of the system requirement in the terms of input, output, programs and procedures. Having identified an outline system, the investigation must go on to suggest the type of equipment, required method developing the system, of running the system once it has been designed.

The project should be developed such that the necessary functions and performance are achieved within the constraints. Through the technology may become obsolete after some period of time, due to the fact that newer version of same software supports older versions, the system may still be used. So there are minimal constraints involved with this project. The system has been developed using .net in front end and SQL in back end, the project is technically feasible for development.

OPERATIONAL FEASIBILITY

Operational Feasibility assesses the extent to which the required software system performs a series of steps to solve business problems and user requirements. This feasibility is dependent on human resources and involves visualizing whether the software will operate after it is developed and be operative once it is installed. It also analyses whether users will adapt to new software. The system is developed by giving prime importance to the ease with which the end users can operate on the system.

PROJECT PLANNING AND SHEDULING

PROJECT PLAN

Proper project management is essential for the successful completion of a software project. Software project management (responsible for project planning) specifies activities necessary to complete the project. After this a project schedule is prepared to accomplish the specified tasks. The purpose of planning and scheduling is to develop te software according to the user requirements within the allocated time and budget. Project planning is part of project management, which relates to the use of schedules such as Gantt charts to plan and subsequently report progress within the project environment. Initially, the project scope is defined and the appropriate methods for completing the project are determined. Following this step, the durations for the various tasks necessary to complete the work are listed and grouped into a work breakdown structure. Project planning is often used to organize different areas of a project, including project plans, workloads and the management of teams and individuals. The logical dependencies between tasks are defined using an activity network diagram that enables identification of the critical path. Project planning is inherently uncertain as it must be done before the project is actually started. Therefore the duration of the tasks is often estimated through a weighted average of optimistic, normal, and pessimistic cases. The critical chain method adds "buffers" in the planning to anticipate potential delays in project execution. Float or slack time in the schedule can be calculated using project management software. Then the necessary resources can be estimated and costs for each activity can be allocated to each resource, giving the total project cost. At this stage, the project schedule may be optimized to achieve the appropriate

balance between resource usage and project duration to comply with the project objectives. Once established and agreed, the project schedule becomes what is known as the baseline schedule. Progress will be measured against the baseline schedule throughout the life of the project. Analyzing progress compared to the baseline schedule is known as earned value management. However, when managing several projects, it is usually easier and faster to use project management software.

PROJECT SCHEDULING

Project scheduling provides details such as start and end date of the project, milestones and tasks for the project. In addition it specifies the resources (such as people, equipment, and facilities) required to complete the project and the dependencies of tasks of the project on each other. An appropriate project schedule prepared according to project plan not only aims to complete the project on time but also helps to avoid the additional cost incurred when the project is delayed. To carry out project scheduling appropriately, some principles are followed. These principles help the project management team to prepare the project schedule. Several techniques are used for keeping track of the project schedule. These techniques are applied after information is collected from the project planning activities.

SYSTEM SPECIFICATION

Hardware Specification

The selection of hardware is very important in the existence and proper working of any of the software. When selecting hardware, the size and capacity requirements are also important. The hardware must suit all application developments**.**

- Processor : i3 or above.
- System Bus : 32Bit or 64Bit
- RAM : 4 GB or Above
- HDD : 500 GB or Above
- Monitor : 14” LCD or Above
- Key Board : 108 Keys

- Mouse : Any Type of mouse
- Mobile : Android supported mobile phone

Software specification

One of the most difficult tasks is selecting software, once the system requirement is find out then we have to determine whether a particular software package fits for those system requirements. This section summarizes the application requirement

- Operating System : Windows 10 Any 32 bit or 64 bit platform
- Front End : Android, .Python
- Back End : MySQL Sever
- IDE : Eclipse or Android studio
  : Python 3.6 or above
  : PyCharm

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