# Artificial Passenger

Artificial Passenger Abstract

Artificial Passenger is a companion for while travelling. This AP is basically a software that is been embedded into the dashboard of the car which interacts with you, talks with you, replies to your questions, answers your questions, its inbuilt cameras watches you, your response, recognizes your lip readings etc. It change the topic of conversation when it recognizes that you are sleepy. It holds your profile information and your interests.

Artificial Passenger Video]

what is Artificial Passenger ?]

The AP is an artificial intelligence based companion that will be resident in software and chips embedded in the automobile dashboard. The heart of the system is a conversation planner that holds a profile of you, including details of your interests and profession.
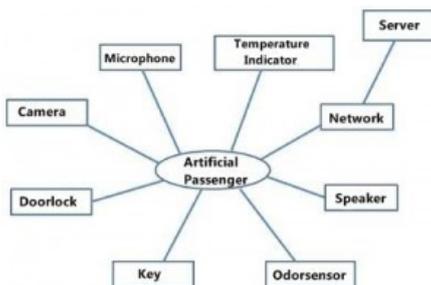
A microphone picks up your answer and breaks it down into separate words with speech-recognition software. A camera built into the dashboard also tracks your lip movements to improve the accuracy of the speech recognition. A voice analyzer then looks for signs of tiredness by checking to see if the answer matches your profile. Slow responses and a lack of intonation are signs of fatigue.

This research suggests that we can make predictions about various aspects of driver performance based on what we glean from the movements of a drivers eyes and that a system can eventually be developed to capture this data and use it to alert people when their driving has become significantly impaired by fatigue.

The natural dialog car system analyzes a drivers answer and the contents of the answer together with his voice patterns to determine if he is alert while driving. The system warns the driver or changes the topic of conversation if the system determines that the driver is about to fall asleep. The system may also detect whether a driver is affected by alcohol or drugs.

How Artificial Passenger works?]
A camera built into the dashboard also tracks your lip movements to improve the accuracy of the speech recognition. Heart of the system is a conversation planner. A microphone picks up answer and breaks it down into separate words with speech-recognition software. A voice analyzer then looks for signs of tiredness by checking to see if the answer matches your profile. Slow responses and a lack of intonation are signs of fatigue. The AP is not an inflatable automaton that sits in the passenger seat. It's an intelligent presence packed into the dashboard electronics. The heart of the system is a conversation planner that holds a profile of you, including details of your interests and profession. When activated, the AP uses the profile to cook up provocative questions such as, "Who was the first person you dated?" via a speech generator and the in-car speakers. When the driver is not able to answer his calls at that moment the mobile indicator automatically accept or decline calls according to drivers wish. The above figure indicates how the mobile can be placed.

Workload Manager:-

In this section we provide a brief analysis of the design of the workload management that is a key component of driver Safety Manager. An object of the workload manager is to determine a moment-to-moment analysis of the user's cognitive workload. It accomplishes this by collecting data about user conditions, monitoring local and remote events, and prioritizing message delivery. There is rapid growth in the use of sensory technology in cars. These sensors allow for the monitoring of driver actions (e.g. application of brakes changing lanes), provide information about local events (e.g. heavy rain), and provide information about driver characteristics (e.g. speaking speed, eyelid status).There is also growing amount of distracting information that may be presented to the driver (e.g. phone rings, radio, music, e-mail etc.) and actions that a driver can perform in cars via voice control. The relationship between a driver and a car should be consistent with the information from sensors. The workload manager should be designed in such a way that it can integrate sensor information and rules on when and if distracting information is delivered. This can be designed as a ³workload representational surface´. One axis of the surface would represent stress on the vehicle and another, orthogonally distinct axis, would represents tress on the driver.

Devices Used In Artificial Passenger:-

The main devices that are used in this artificial passenger are:-

Eye tracker or Camera.

Voice recognizer or speech recognizer.

Touch sensors.

How does eye tracking work?

Collecting eye movement data requires hardware and software specifically designed to perform this function. Eye-tracking hardware is either mounted on a user's head or mounted remotely. Both systems measure the corneal reflection of an infrared light emitting diode (LED), which illuminates and generates a reflection off the surface of the eye. This action causes the pupil to appear as a bright disk in contrast to the surrounding iris and creates a small glint underneath the pupil. It is this glint that head-mounted and remote systems use for calibration and tracking.

Hardware: - Head-mounted and remote systems. The difference between the head-mounted and remote eye systems is how the eye tracker collects eye movement data. Head - mounted systems since they are fixed on auser's head and therefore allow for head movement use multiple data points to record eye movement. To differentiate eye movement from head movement, these systems measure the pupil glint from multiple angles. Since the unit is attached to the head, a person can move about when operating a car or flying a plane, for example For instance, human factors researchers have used head-mounted eye-tracking systems to study pilots' eye movements as they used cockpit controls and instruments to land airplanes (Fitts, Jones, and Milton1950).

Software: - Data collection, analysis, and representation Data collection and analysis are handled by eye-tracking software. Although some software is more sophisticated than others, all share common features. Software catalogs eye- tracking data in one of two ways. In the first, data are stored in video format. ERICA's Eye Gaze[TM] software, for instance, uses a small red x to represent eye movement that is useful for observing such movement in relation to external factors such as user verbalizations. In the other, data are stored as a series of x/y coordinates related to specific grid points on the computer screen. Data can be organized in various ways--by task or participant, for example and broken down into fixations and saccades that can be visually represented onscreen. Fixations, which typically last between 250 and 500 milliseconds, occur when the eye is focused on a particular point on a screen.

Architecture:-

Microphone:

For picking up the words and separate them by some internally used software for Conversation.

Camera:

This will track the lip movements of the driver and also used for the improvement for the accuracy of the speech recognition.

External service provider:

Linked to the dialog system by wireless network system Coupled with

Car media, driver profile, conversational planner.

Driver analyzer module

It controls interruption of a dialog between the driver and the car dashboard (for example, interrupting a conversation to deliver an urgent message about traffic conditions on an expected driver route).

Temperature indicator:

This component is used to measure the temperature inside the vehicle and it also helps in maintaining the steady temperature

Door lock sensor:

This sensor alarms when the door is not locked.

Odor sensor:

This sensor will periodically sprinkle the sweet air inside the vehicle.

Speaker:

This generally used for the entertainment purpose.

Applications of artificial passenger:-

The following are the applications of the artificial passenger:

Artificial Passenger is broadly used to prevent accident.

Prevents the driver, falling asleep during long and solo trip.

If the driver gets a heart attack or he is drunk it will send signals to vehicles near by   about this so driver there become alert.

In any problem it alerts the vehicles near by this, so the driver there becomes alert.

Opens and closes the doors and windows of the car automatically.

It is also used for the entertainment.

It provides a natural dialog car system that understands content of tapes, books and radio   programs.

This system can also be used in other situations such as

Security guard

Operators at nuclear plants

Pilots of airplane.

Cabins in airplanes.

Water craft such as boats.

Trains and subways.
Artificial Passenger Advantages]

- This helps the driver to have a companion while driving.
- This System recognizes if the driver is sleepy or not.
- This system recognizes if the driver had taken any drugs or alcohol. If yes this system can prevent from driving the vehicle by shutting down the vehicle.