Intelligent Vehicle Systemsusingneural Network Sand Biometrics

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Abstract: We propose a novel approach using a system based on neural networks and biometric to Design Intelligent System for smart cars, according to unfolding alternative capabilities of neural networks in the industry as; pattern recognition, feature extraction and classification. So many innovations involves researchers mind. These idea scan be used for neural networks and biometric. Among of these ideas, use of neural networks in the face detection is. In this study, we want design intelligent systems that recognize interests of all the properties and the nature of the Passenger bodies and driver can be prepared according to individual passenger. The system combines neural network architecture for multiple uses any part of the configuration and at the finally output of the all these networks imported to a neural network with various outputs. and trained to make decisions and set the system runs.

Keywords: Neural networks, intelligent systems, feature extraction, Biometric, Smart car

I. INTRODUCTION

Making cars smart to provide comfort and safety of passengers. This is done through various but the idea that we use in this process is a model based of the human brain. An Artificial Neural Network (ANN) is an information processing paradigm that is inspired by the way biological nervous systems, such as the brain, process information[4]. It is composed of a large number of highly interconnected processing elements (neurons) working in unison to solve specific problems. ANNs, like people, learn by example. An ANN is configured for a specific application, such as pattern recognition or data classification, through a learning process. Learning in biological systems involves adjustments to the synaptic connections that exist between the neurons. This is true of ANNs as well [1]. So here we have a system that can be trained to perform the working accordance with its instructions. For the implementation of the intelligent network we use this idea. For better clarity, Imagine the cars, in the past were had control systems much lower and passenger or driver needed to use these facilities with trivial training and skills. Consider now a car that has many features and panels in many complex settings,

The welfare and safety facilities, all vehicles are required to teach the persons that using it taking place (Guide to the sound system, navigation system, seat configurations, etc).As a result, many manuals not used. Process of reading all the catalogs and guides to used equipment takes a lot of time from a person, Also, person is not interest to read many Manual parts And thus many safety facilities and unique features remains hidden or are not used, and in many cases has been seen that the consumer puts the settings in automatic mode and ignores his or her desired settings. Or suppose two people that use a car together. In this case, each person that use the vehicle set all parameters according to him physical characteristics, such as the handle adjusts, bench seat consoles and then use the next person has to spend a lot of time to restore these settings to make his own case. On the other hand, imagine you have a personal luxury car with your own driver, driver after some time, learns all about your interests and desires expect to do when you use this car be familiar with, Such as opening car doors and help you ride, Proper seat height adjustment, Turn on your heated

seat prior to your use, Set the temperature inside the car to fit your application and so on. We can design intelligent system for vehicles that will replace this driver. But doing all about your interests and settings except driving. In order to achieve a window to a new subsequent investigation. An example of the today car panels is showing in figure (1).

Figure1: An example of the now a day advanced cars panel (down picture from 2014 Bentley Mulsanne website)

II. THE STRUCTURE OFNEURAL NETWORK

ANN is an information processing system of the human brain was the idea And data processing take on small and large deposits that forma network of interconnected and work in parallel with each other to resolve the issue [2]. These networks help students in programming, data structured sign, which can act as neurons. After creating a network between neurons, apply a learning algorithm to the train network. This network has two active neurons or neural network (ON or 1) and inactive (OFF or 0) and each

edge (synapses or connections between nodes) with a weight. Edges with positive weights stimulate or activate next active node, and edges with negative weights, next nodes are connected to the block or disable (if it is active) [1]. ANN l east two human brains are similar: i. stage are called learning. ii Synaptic weights are used to store knowledge [2].

A neural network consists of layers and the weights of the components. Network behavior also depends on the relationship between the members. In general, neural networks, there are three types of neuron layers:

One Input layer: Get the raw data that is fed into the network.

Two Hidden layers: the layers by weighted connections between the input and hidden layers is determined. Weights between input and hidden units determine when a hidden unit to be activated.

Three Output layer, the output of hidden unit activity and weight depending on the connection between the hidden and output unit is [3]. In general, a neural network must have the following characteristics: -Be able to classify patterns-Small enough to be physically realistic, Work with education and learning has to be programmed-The ability to generalize the. An example provided in the training process is [3]. The ability adjusts the network parameters (synaptic weights) in the network path when the network changes and new requirements are. The aim of this work is that if the network is trained for a particular situation, small changes occurred in the network environment, the network to be efficient with little training, for new terms. The other information is stored in the synapses in neural networks; each neuron in the network is affected, potentially, the entire activity of the neurons. The resulting data type is Potential from each other and affects the whole network. The three-stage neural network training, validation and implementation lays behind. The neural network can solve problems that exact mathematical relationship between inputs and outputs are not used. Training a neural network indeed nothing more than setting the weights connecting the neurons instead of the example is given to network output to the desired output converters [2].

III. APPLICATION OFNEURAL NETWORKS

Neural networks every day in industry, medicine, communications, economics and many other things has penetrated. Of cases where neural networks with various algorithms in intelligent systems can be used for making automotive systems, face recognition and fingerprint identification system and voice recognition can be named [2]. All of these networks under our smart grid will form a coherent network.
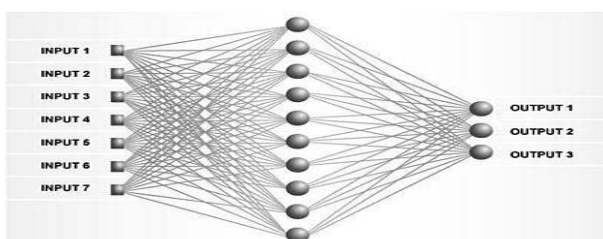

Figure2: Scheme, a multilayer neural network with an input layer and the hidden layer and output layer.

IV. SELECTED ENTRIES

Biometrics refers to the identification of humans by their characteristics or traits. Biometrics is used in computer science as a form of identification and access control. It is also used to identify individuals in our Innovation. Biometric identifiers are the distinctive, measurable characteristics used to label and describe individuals [5]. Biometric identifiers are often categorized as physiological versus behavioral characteristics [6]. Physiological characteristics are related to the shape of the body.

Examples include, but are not limited to fingerprint, face recognition, DNA, Palm print, hand geometry, iris recognition, retina and odor / scent. Comportment characteristics are related to the pattern of behavior of a person, including but not limited to: typing rhythm, gait, and voice. Many different aspects of human physiology, chemistry or behavior can be used for biometric authentication. The selection of a particular biometric for use in a specific application involves a weighting of several factors. Jain *et al.* (1999)[7]identified seven such factors to be used when assessing the suitability of any trait for use in biometric authentication. Universality means that every person using a system should possess the trait the first step and most important step Intelligent system for that should be considered in identifying the passengers, this system uses various methods to identify passengers and their owner is. Among these systems, mainly using based on different neural network training algorithms are the facial recognition system, fingerprint identification systems, palm print recognition, iris recognition, DNA, ear, Gait and voice recognition and also we can use RFID system with biometric systems. Can even be applied several systems to identify with each other as well as to prevent the system error. For a blind person who is going to ride car, RFID Upon approaching the vehicle having an intelligent system to identify, The car door opens automatically and with prompt and specify a continuous beep the car will guide the blind person toward the car door.

In addition to vehicle intelligent system identifying persons it must be able to identify the passenger seat and the part that the person where sits in car and adjust this place for him. To do this can weight detection sensors beneath seat or other biometrics equipment such as face detection to determine which person used which sit in the car can be used.

All of these detector systems that use certain features of action classification and identification are doing their have outputs, will give these outputs for notifying the car's intelligent system inputs [4]. Now turn on the vehicle's preferences, the first setting can adjust the chair according to the physical characteristics of individual subjects like Lifter, Seat cushion, seat headrests, height adjustment consoles, lumbar and etc. Seat belt height adjustment settings for individual categories can adjust the angle of the car's side mirrors, rear view mirrors, height adjustable steering wheel, the dashboard backlight adjustment and change, adjust the display angle of the car navigation system, passenger foot rest settings that are commensurate with the stature of the person and player sound equalizer settings to suit personal preference, these settings apply to the individual and the learning system has several stages during the car ride when

boarding the vehicle, the car servicing an intelligent system for him to do.

V. TRAININGINTELLIGENTVEHICLESYSTEMS

All the things that person expects the vehicle to do automatically should it be taught. The learning system for a standard configuration in the least possible time and speed training system to be should be designed. Obviously, of this part the team of experts and professionals, the safety systems and passenger welfare facilities worked on together and setting priorities and higher priority settings that have to be done first (for example, adjustable height seatbelt).The educational program is conducted in such a manner that the person identification system has been activated and will identify the individual. Then preferences in order of priority stated requests from the person and individual and preferences according to their individual characteristics will do. The first once all these are done automatically, that the person to verify the setting up the vehicle Intelligent system. From now on, every time someone wants to use the car all settings without requiring the previous person had done make one change and spend a lot of time to this issue, intelligent vehicle systems based on neural networks this configuration done And without the hassle uses of a car.

VI. RESULT

Intelligent systems based on neural networks in most cases such the classification is no alternative that does show better performance, this feature is due to the modeling of the human brain. This intelligent system provided all needs such as to enjoy the comforts and safety of all equipment. As a driver who is familiar with all the properties and comportment of your expectations and ordered to be done

without your request desired configuration runs. the idea picks up research groups with the greatest impact on the features extracted for this works and several different algorithms and neural networks to get the highest percentage of correctly applied and examine to the intelligent system based on neural networks in which all the natural characteristics of the occupant's body and knows their interests, prepare automotive environment according to the individual occupant.

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