Smart Car Steering Wheel

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Nowadays, more than 50 000 drivers are affected by health problems prior to a car accident. Moreover, 82 000 crashes occur a year due to drowsy and drunk driving. In order to have large impact and better efficiency, my project aims to propose a solution that can detect, at the same time, the state of drunkenness, drowsiness, loss of consciousness and predict heart attacks. The first step was to find a common and efficient way of detecting drunkenness and predicting heart attacks. After doing several researches, Electro-Cardiogram (ECG) was the most relevant solution because it allows to measure the different changes and deficiencies in the heart waves. Driver's ECG could not only warn us about an upcoming heart attack(HA)but could also indicate us high alcohol levels in the blood. For real time ECG measurements the sensors should be in permanent contact with the driver. That's why we had the idea to integrate them around the steering wheel. The innovative "Smart Car Steering Wheel", entirely developed by myself, is, then, capable of predicting heart attacks and detecting drunkenness above a specific threshold by interpreting his ECG through numerous data-processing algorithms. Adding to that, the system detects drowsiness and any loss of consciousness thanks to facial recognition algorithms. In case of emergency, the system sends the adequate data to CAN Bus which proceeds to real time stopping car according to a specific procedure, it also sends an alert to the emergencies mentioning the driver's GPS location. The results were significant, the system could effectively identify deviancies in the P wave, ST segment and QRS complex, in order to detect drunkenness and predict HA, along with detecting real-time drowsiness and loss of consciousness.

Awards Won: