MSc Project Report

'Affect-Pulse'

Intelligent Solution for Neuro Marketing using Machine
Learning Techniques

Trevor Fabian Soris

2019

A report submitted as part of the requirements for the degree of
MSc in Big Data Analytics at Robert Gordon University, Aberdeen, Scotland

Abstract

Marketing plays a significant role in any kinds of business. Product marketing requires In-depth researching, advertising, and selling products or services to reach out to the target audience. Retailing is undergoing rapid growth with the rising dominance of e-commerce. Around the world, e-commerce is changing the way people shop around the world. To withstand the emerging flow in e-commerce, the marketer has to ensure that the correct product reaches the target audience at the correct time.

When it comes to e-commerce websites, visual content can make or break a website. It plays a pivotal role in making a successful sale or putting off a potential customer. Current statistics on e-commerce suggest that 22% of the total sales were returned since the product received did not look the same. Visual content is the only communicating medium about the product. It is essential to make sure that the target audience will like the content posted in the e-commerce page

emotions is one of the ways to communicate or express their self. A person's emotions can be identified from their gesture, facial movements, and Body language. However, finding the emotions from these methods can get quite tricky.. In this research, the proposed solution will aid the marketers of the product, to identify/predict likeness towards a visual medium before it goes online in their respective e-commerce sites

Human emotion detection using Electroencephalogram (EEG) started playing a crucial role in developing a smarter Brain-Computer Interface (BCI). In this research, DEAP physiological, emotional database is used to identify emotions using the arousal valance model. Using wavelet transformation, the EEG signal was decomposed into four frequency bands (theta, alpha beta, and gamma). The Daubechies order 4 wavelet function (db4) was utilized to do the processing. From these frequency bands, linear (Energy, Power Spectral Density) and nonlinear (Entropy) statistical features were extracted, which were used in the machine learning classification algorithms. Many experiments were carried out on different types of classification algorithms such Neural Network , Support Vector Machines and Bayesian Networks . From the experiments it was found Neural network produced the most accurate models. Once the model built, using the DEAP dataset, knowledge learned was transferred to another new domain, this research it was Neurosky Mindwave Mobile device to classify the emotions from the RAW EEG signals. Finally, the prototype was evaluated by the potential users, and some future enhancements were identified