**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

**BELGAUM – 590014**

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**A Project Report on**

**A REAL TIME APPLICATION TO IDENTIFY ALCOHOLICS**

**FROM ECG SIGNALS**

**Submitted in partial fulfilment of the requirement for the award of degree of**

**BACHELOR OF ENGINEERING**

**IN**

**ELECTRONICS AND COMMUNICATION**

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**P.E.S. INSTITUTE OF TECHNOLOGY**

**(An Autonomous Institute under VTU, Belgaum)**

**BENGALURU - 560085**

**DECLARATION**

We hereby declare that the project report entitled “**A REAL TIME APPLICATION TO IDENTIFY ALCOHOLICS FROM ECG SIGNALS”** is the bonafide record of the project carried out at **P.E.S. Institute of Technology** in partial fulfilment of the requirements for the award of degree **Bachelor of Engineering** in **Electronics and Communication Engineering** of **Visvesvaraya Technological University, Belgaum** during the academic year 2017. We further declare that the project report is not submitted to any other universities in fulfilment of the requirements for the award of any degree.

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**CERTIFICATE**

This is to certify that the project titled **A REAL TIME APPLICATION TO IDENTIFY CHRONIC ALCOHOLICS FROM ECG SIGNALS** is a bonafide work carried out by **Akarsh N. Kolekar, Apoorv Vatsal** and **Rakshith Vishwanatha** bearing University Seat Number **1PI13EC009, 1PI13EC017 and 1PI13EC075** respectively in partial fulfilment for the award of **Bachelor of Engineering** in **Electronics and Communication** from the **Visvesvaraya Technological University**, Belgaum during the academic year 2017. It is certified that all correction/suggestions indicated for internal assessment have been incorporated in the report deposited in the department library. The project report has been approved as it satisfies the academic requirements with respect to the project work prescribed for the said degree.

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**ABSTRACT**

Several medical studies reveal alcohol consumption has pronounced effects on the physiology of the consumer. These physiological changes can be seen in the heart rate variability (HRV) of the consumer. In this article, electrocardiogram (ECG) samples of chronically alcoholic subjects and normative subjects are collected for HRV analysis and feature extraction. The features extracted are fed to machine learning algorithms to enable the algorithms to classify subjects into alcoholic or normative classes. For this classification problem, Support Vector Machines and Extreme Learning Machines have been trained, and their performance has been compared. While time domain, frequency domain and non-linear features are generally extracted from ECG signals for HRV analysis, in this study a new set of features obtained from Autoregressive Modelling (using Exogenous Inputs) have also been used to improve the accuracy of the algorithms being trained.

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