

**A Project Report**  
**on**  
**Identification of Arrhythmia using Electrocardiogram Data**

*Submitted in the Partial Fulfillment of the Requirements  
for the award of*

**Bachelor of Technology**  
**in**  
**Electronics & Communication Engineering**

*By*

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Under the guidance of  
**Prof. Haranath Kar**



**Department of Electronics & Communication Engineering**  
**Motilal Nehru National Institute of Technology Allahabad**  
**Prayagraj – INDIA**

**(November, 2018)**

# UNDERTAKING

We declare that the work presented in this project titled “*Identification of Arrhythmia using Electrocardiogram Data*”, submitted to the DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING, MOTILAL NEHRU NATIONAL INSTITUTE OF TECHNOLOGY ALLAHABAD, PRAYAGRAJ for the award of the *Bachelor of Technology* degree in *Electronics and & Communication Engineering* is our original work. We have not plagiarized or submitted the same work for the award of any other degree. In case this undertaking is found incorrect, we accept that our degree may be unconditionally withdrawn.

Date: 19-11-2018

Prayagraj, India

Deepanjan Saha

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**CERTIFICATE**

This is to certify that the work contained in the project titled “**Identification of Arrhythmia using Electrocardiogram Data**”, submitted by **Deepanjan Saha, Aman Agarwal and Pawan Kumar Thapa** in the partial fulfillment of the requirement for the award of Bachelor of Technology in Electronics & Communication Engineering to the Electronics & Communication Engineering Department, Motilal Nehru National Institute of Technology, Allahabad, is a bonafide work of the students carried out under my supervision.

Date: 19-11-2018

Place: Prayagraj

Haranath Kar  
Professor  
ECE Department  
MNNIT, Allahabad

## Acknowledgement

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Date: 19-11-2018

Place: Prayagraj

Deepanjan Saha  
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## **Abstract**

An Electrocardiogram (ECG) measures the electric activity of the heart and has been widely used for detecting heart diseases due to its simplicity and non-invasive nature. By analyzing the electrical signal of each heartbeat, i.e., the combination of action impulse waveforms produced by different specialized cardiac tissues found in the heart, it is possible to detect some of its abnormalities. In this project, we developed an automatic ECG-based heartbeat classification method. We apply the methods of ECG-based automated abnormalities heartbeat classification by presenting the ECG signal pre-processing, the heartbeat segmentation techniques, the feature description methods and the learning algorithms used. The heartbeat segmentation is done using Pan Tompkins algorithm and the feature extraction is done using Discrete Wavelet Transform. In the following project we make use machine learning algorithms like support vector machines, random forests and decision trees to derive a model for detection of arrhythmia.