

# **Report of Workshop on** **Neural Networks Algorithm for Biomedical** **Applications**

Held during 18<sup>th</sup>-19<sup>th</sup> March, 2019

**SPONSORED BY**

TEQUIP-III

**ORGANIZED BY**

**BMSCE IEEE Student Branch,**

Electrical & Electronics Engineering  
and

Department of Medical Electronics  
*in association with*

FET, MJP. Rohilkhand University Bareilly U.P.  
under Twinning

## **OBJECTIVES**

- To highlight the importance of modelling and enhancing the knowledge in solving engineering problems using modelling methods
- To familiarize the participants with the latest modelling tools and techniques
- Use of open-source algorithms for research, teaching and industrial usage pertaining to various areas.

## **LECTURE SESSIONS**

Aiming to provide an intense training on Neural Networks at an undergraduate level, a two-day workshop on ‘Neural Networks Algorithm for Biomedical Applications’ was held at BMS College of Engineering, Bangalore.

The workshop was designed for students as well as teachers, with a view to make the participants gain in-depth knowledge of Machine Learning, and had eight lecture sessions altogether. Mr. Supreeth Y.S, Co Founder and CEO at Tequed Labs, along with his team, were the resource persons of the workshop.

Mr. Supreeth delivered the inaugural lecture by giving a brief introduction on Artificial intelligence, Machine Learning and their pertinence in today's world. This was followed by an introduction to Python, one of the pivotal languages used in these fields, and a tutorial session based on its programming basics.

Machine Learning algorithms, reinforcement learning and regression techniques were presented such that, they were helpful in inculcating a positive attitude towards Machine Learning among the participants. The next session focussed on helping the participants to have a deep understanding about the primary classifiers and algorithms used in Machine Learning, namely the Naive Bayes, Decision Tree and Random Forest Classifiers, and K-means clustering algorithm.

The basics of OpenCV and its working were explained to use in conjunction with image acquisition and video streaming. Algorithms used in object detection, as in the case of human facial recognition were demonstrated. Codes used in voice recognition, natural language processing, and how to perform sentiment analysis on platforms such as Twitter, were explicated such that participants could execute and verify them right after. All the eight lecture sessions were informative as well as interactive, as discerned from the feedback received from the participants.

## **PROGRAMME SCHEDULE**

### **DAY-1**

#### **→ Session-1**

##### **9.30am - 11.00am**

- Introduction to Python (Understanding difference between python and other known programming environments).
- Python programming basics.
- Introduction to Artificial intelligence, how AI, ML and DL differ and co-relate.

#### **→ Session-2**

##### **11.00am - 12.30pm**

- Machine learning Algorithms-
- Supervised Learning
- Unsupervised Learning

Semi-Supervised Learning

→ **Session-3**

**1.30pm - 3.00pm**

Reinforcement Learning

Regression and its Types

K – Nearest Neighbours

Support Vector machines

Naïve Bayes

→ **Session-4**

**3.00pm - 4.30pm**

Decision Tree Classifier

Random Forest Classifier

K – Means Clustering

Programs and examples.

**DAY-2**

→ **Session-1**

**9.30am - 11.00am**

Working with OpenCV and installation.

Image Acquisition and Video streaming.

→ **Session-2**

**11.00am- 12.30pm**

Object Detection using Machine Learning.

→ **Session-3**

**1.30pm - 3.00pm**

Human Detection using Machine learning.

Creating Machine learning models and working on various data sets.

→ **Session-4**

**3.30pm - 4.30pm**

Natural Language processing and Sentimental Analysis.

**CONCLUSION**

The Neural Network workshop was beneficial to all the students and teachers who attended, as the topics were well elucidated by Mr. Supreeth and his team. The feedback received reflected that they were also equipped with a deep understanding of the topics covered.

**CONVENERS**

Dr. Vijayalakshmi K, Assoc. Professor, Dept of ML Engg.

Dr. R. S. Geetha, Assoc. Professor, Dept of E & E Engg.

**CO-ORDINATORS**

Dr. Suma M.S, Professor, Dept of ML Engg.

Dr. Chandasree Das, Assoc. Professor, Dept of E & E Engg.

