**Comparison between Decision Tree and Random Forest**

**towards recommendation system or engine**

Submitted as a partial fulfillment of Bachelor of Technology in Computer Science & Engineering

of

Maulana Abul Kalam Azad University of Technology

*(Formerly known as West Bengal University of Technology)*

****

**Project Report**

***Submitted by***

**Name of Students University Roll No.**

**Pritam Roy 11600118037**

**Srijon Mallick 11600118017**

**Souvik Saha 11600118020**

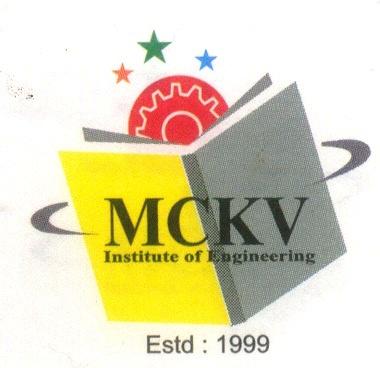
**Rupak Pal 11600118032**

**Pritam Das 11600118038**

Under the supervision of

**Dr. S. S. Thakur**

Associate Professor, Department of Computer Science and Engineering



**Department of Computer Science & Engineering,**

**MCKV Institute of Engineering**

**243, G.T. Road(N)**

**Liluah, Howrah - 711204**

**Department of Computer Science & Engineering**

**MCKV Institute of Engineering**

**243, G. T. Road (N), Liluah, Howrah-711204**

**CERTIFICATE OF RECOMMENDATION**

I hereby recommend that the thesis prepared under my supervision by Pritam Roy, Rupak Pal,

Pritam Das, Srijon Mallick, Souvik Saha entitled Comparison between decision tree and random forest

towards recommendation system or engine be accepted in partial fulfillment of the requirements for the

degree of Bachelor of Technology in Computer Science & Engineering Department.

----------------------------------------------------------- --------------------------------------

Mr. Avijit Bose Project guide

Assistant Professor & Head of the Department, Dr. S. S. Thakur,

Computer Science & Engineering Department Associate Professor,

MCKV Institute of Engineering, Howrah Computer Science &Engineering Department

**MCKV Institute of Engineering**

**243, G. T. Road (N), Liluah** **Howrah-711204**

*Affiliated to*

**Maulana Abul Kalam Azad University of Technology**

**(Formerly known as West Bengal University of Technology)**

**CERTIFICATE**

This is to certify that the project entitled Comparison between decision tree and random forest towards recommendation system or engine and submitted by

Name of students University Roll No.

Pritam Roy 11600118037

Srijon Mallick 11600118017

Souvik Saha 11600118020

Rupak Pal 11600118032

Pritam Das 11600118038

has been carried out under the guidance of myself following the rules and regulations of the degree of

Bachelor of Technology in Computer Science & Engineering of **Maulana Abul Kalam Azad University**

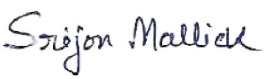
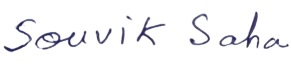
**of Technology (**Formerly West Bengal University of Technology).

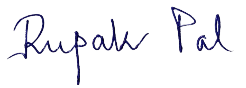
(Signature of the project guide)

**Dr. S. S. Thakur,**

**Associate Professor,**

**Computer Science & Engineering Department**

1. 
2. 
3. 

1. 
2. 

**MCKV Institute of Engineering**

**243, G. T. Road (N), Liluah** **Howrah-711204**

*Affiliated to*

**Maulana Abul Kalam Azad University of Technology**

**(Formerly known as West Bengal University of Technology)**

**CERTIFICATE OF APPROVAL**

**(B. Tech Degree in Computer Science & Engineering)**

This project report is hereby approved as a creditable study of an engineering subject

carried out and presented in a manner satisfactory to warrant its acceptance as a prerequisite to

the degree for which it has been submitted. It is to be understood that by this approval,

the undersigned do not necessarily endorse or approve any statement made; opinion expressed

and conclusion drawn therein but approve the project report only for the purpose for which it has

been submitted

COMMITTEE ON FINAL 1.

EXAMINATION FOR 2.

EVALUATION OF 3.

PROJECT REPORT 4.

5.

**ACKNOWLEDGEMENT**

We express our sincere gratitude to Dr. S.S. Thakur, Associate Professor, Department of Computer Science and Engineering, our project guide and Mr. Avijit Bose, Assistant Professor and Head of Department (CSE) for providing us their guidance and cooperation for the project. We also extend our sincere thanks to all other faculty members of Computer Science & Engineering Department and our friends for their support and encouragement. We will be failing in duty if we do not acknowledge with grateful thanks to the authors of the references and other literatures referred to in this project. Last but never the least we are very much thankful to our parents who guided and supported us in every step which we took.

**CONTENTS**

1. **Abstract 1**
2. **Introduction 2**
3. **Machine Learning 4**
   1. **What is machine Learning? 4**
   2. **Supervised Learning 4**
   3. **Unsupervised Learning 5**
4. **Decision Tree 6** 
   1. **Decision Tree Terminologies 6**
   2. **Why use Decision Tree? 7**
   3. **How does the Decision Tree algorithm Work? 7**
   4. **Attribute Selection Measures 8**
   5. **Advantages of the Decision Tree 9**
   6. **Disadvantages of the Decision Tree 10**
5. **Random Forest 10**
   1. **Assumptions for** **Random Forest 11**
   2. **Why use Random Forest? 11**
   3. **How does Random Forest algorithm work? 11**
   4. **Advantages of the Random Forest 12**
   5. **Disadvantages of the Random Forest 12**
6. **Methodology 14**
   1. **Data Sampling 14**
   2. **Data Understanding 14**
      1. **Dataset Structure 14**
   3. **Data Cleaning 16**
   4. **Data Analysis 18**
   5. **Modelling 22**
      1. **Decision Tree 22**
      2. **Random Forest 22**
   6. **Technology Used 22**
   7. **Software and Hardware Requirements 24**
7. **Result and Discussions 24**
8. **Conclusion 27**
9. **Future Scope 28**
10. **References 30**