**SVKM’s NMIMS**

**Mukesh Patel School of Technology Management & Engineering**

A.Y. 2023 - 24

**Course: Machine Learning**

**Project Report**

|  |  |  |
| --- | --- | --- |
| Program |  | |
| Semester |  | |
| Name of the Project: |  | |
|  | | |
| Details of Project Members |  |  |
| Batch | Roll No. | Name |
|  |  |  |
|  |  |  |
|  |  |  |
| Date of Submission: | | |

**Contribution of each project Members:**

|  |  |  |
| --- | --- | --- |
| Roll No. | Name: | Contribution |
|  |  |  |
|  |  |  |

**Github link of your project:**

**Note:**

1. Create a readme file if you have multiple files
2. All files must be properly named (I004\_MLProject)
3. Submit all relevant files of your work
4. **Plagiarism is highly discouraged (Your report will be checked for plagiarism)**

**Rubrics for the Project evaluation:**

|  |
| --- |
| * Evaluation of project will be based on following rubrics * Domain knowledge and literature review in the selected topic (5 marks) * EDA, Implementation and performance metrics used (10 marks) * Beyond classroom knowledge gained and implemented (5 marks) |

**Project Report**

**Selected Topic**

**by**

**Student 1, Roll number: xx**

**Student 2, Roll number: xx**

**Student 3, Roll number: xx**

**Course: Machine Learning**

**AY: 2023-24**

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**I.** **Storyline or Applications of Project**

An alarming number of people struggle with sleep-related health difficulties in today's fast-paced world of hustle and bustle. The quality of life for millions of people globally is greatly impacted by the startlingly high frequency of disorders including sleep apnea and insomnia. Furthermore, these problems are made worse by the widespread issue of poor sleep quality, which jeopardizes productivity and general well-being.

Even with the increasing recognition of the significance of sleep, there is still a significant deficiency of easily accessible, all-inclusive materials devoted to comprehending and resolving sleep-related issues. Help seekers frequently come across incomplete information dispersed over several sources, which causes them to get frustrated and confused.   
  
Our initiative, "Sleep Savvy," was inspired by the urgent need for a comprehensive solution and seeks to be a source of information and assistance for those navigating the challenges associated with sleep health. Through the integration of evidence-based insights, useful advice, and professional assistance into a single, easily accessible platform, Sleep Savvy aims to enable people to take proactive measures to improve the quality of their sleep and their general well-being.

It is clear from thorough investigation and analysis that current treatments frequently fail to offer customized, approachable solutions that satisfy a range of requirements and preferences. In addition, the absence of a centralized platform makes it more difficult to organize community involvement and information sharing, which impedes attempts to address the widespread problem of sleep disorders and irregular sleep patterns.   
  
A comprehensive, user-focused website that informs and enables people to make educated decisions about their sleep health is necessary in light of these problems. Through addressing the complex nature of sleep-related problems and creating a community that is supportive, Sleep Savvy aims to transform the way that sleep wellness is approached, eventually enhancing people's quality of life all around the world.

**II. Literature Review**

Describe the existing work in the chosen topic. You can make table (Title of the paper, published year, major contributions, algorithms used and performance)

**III. Data Preprocessing and Exploratory data Analysis with Visualization**

Perform all data cleaning and preprocessing steps. Perform data visualization using different charts/graph. Make sure to write your own inferences

**IV. Machine learning models with hyper parameter tuning**

Design the machine learning models and perform necessary hyper parameter tuning

**V. Performance Evaluation**

Performance metrics as applicable

**VI. Comparison of different techniques used**

Comparison of different techniques used in terms of algorithms, working and performance

**VII. Deployment/GUI/ Learning beyond classroom**

* Undersampling
* Oversampling
* Streamlit Interactive GUI
* Deployment using community cloud
* Using pickle files

**VIII. Learnings and challenges you faced while doing the Project**

:

* Handling Imbalanced Data
  + Undersampling
  + Oversampling
* Not being able to tune multiple hyperparameters simultaneously due to compute limitations
* Organisation of GUI

**IX. Conclusion**

* What are the key takeaways from the project?