Predicting hospitalization using Artificial Intelligence

A Project

Presented to the

Faculty of

California State University,

San Bernardino

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

in

Computer Science

by

Sanath Ramesh Hiremath

May 2024

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Approved by:

Dr. Fadi Muheidat, Advisor, Computer Science and Engineering

Dr. Qingquan Sun, Committee Member

Dr. Ronald Salloum, Committee Member

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ABSTRACT

Hospitals, especially emergency rooms, are often plagued by long wait times and inefficient resource allocation. This project proposes a solution using machine learning to predict hospital admissions for patients arriving at the ER.

By analyzing patient data like age, medical history, and symptoms, the proposed models will estimate the probability of hospitalization. This will enable healthcare professionals to make faster and more informed decisions about admitting patients, reducing wait times and improving resource utilization.

The project aims to develop and evaluate three machine learning models: Naive Bayes, Support Vector Machine (SVM), and Random Forest. Each algorithm offers unique strengths for handling different complexities of data and will be rigorously tested to ensure accuracy and reliability.

Successful implementation is expected to significantly improve the ER experience for both patients and staff. Patients will benefit from faster access to care, while healthcare professionals will be able to allocate resources more efficiently, ultimately leading to improved quality of care and reduced costs.

ACKNOWLEDGEMENTS

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# First-level Heading

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CHAPTER TWO  
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Table 1. Comparison of Favorite Ice Cream Flavors by Poll

|  |  |
| --- | --- |
| Flavor | Percentage |
| Chocolate | 60% |
| Cookie Dough | 28% |
| Vanilla | 12% |

Figure 1. Comparison of Categories.

Table 2. A Second Table

|  |  |
| --- | --- |
| Flavor | Percentage |
| Chocolate | 60% |
| Cookie Dough | 28% |
| Vanilla | 12% |

CHAPTER THREE  
CHAPTER THREE SAMPLE TITLE

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Table 3. Comparison of Least Favorite Ice Cream Flavors

| Flavor | Percentage |
| --- | --- |
| Rum Raisin | 42% |
| Bubble Gum | 33% |
| Cotton Candy | 25% |

CHAPTER FOUR  
THIS IS A TEST CHAPTER

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Table 4. Test Title

| Flavor | Percentage |
| --- | --- |
| Rum Raisin | 42% |
| Bubble Gum | 33% |
| Cotton Candy | 25% |

**Note:**

**Table: Title must be at the top, source material/notes appear at the bottom.**

**Figure: Title must be at the bottom of the figure.**

APPENDIX A  
INSERT APPENDIX TITLE HERE

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APPENDIX B  
INSERT APPENDIX TITLE HERE

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APPENDIX C  
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REFERENCES

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