UNDER GUIDANCE OF DR. NAVEEN KUMAR
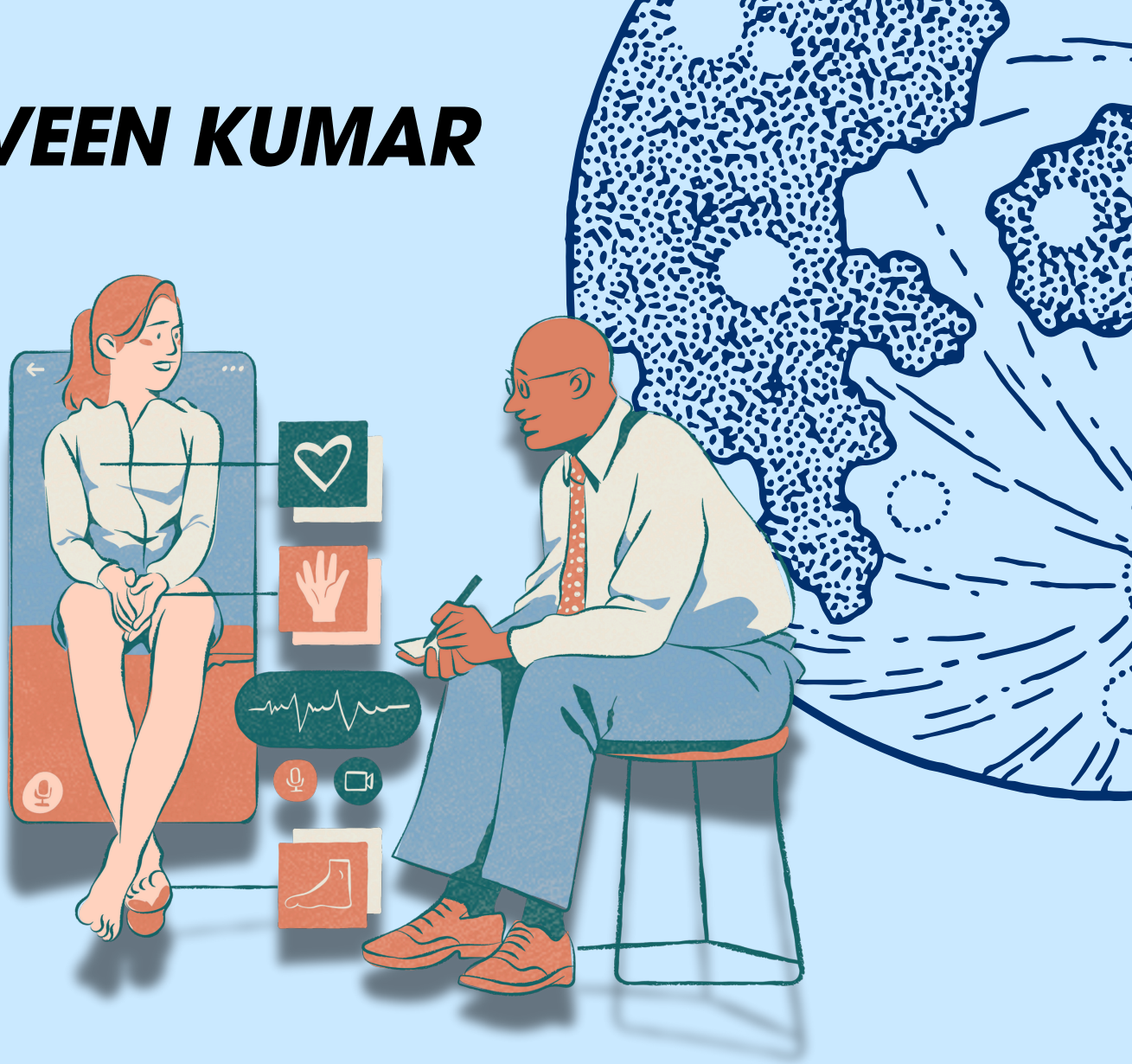
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Heart disease prediction

USING JELLYFISH OPTIMIZATION ALGORITHM

INTRODUCTION

- PROBLEM STATEMENT: HEART DISEASE IS A LEADING CAUSE OF MORTALITY, AND ACCURATE PREDICTION IS CRUCIAL FOR EARLY DIAGNOSIS AND TREATMENT.
- OBJECTIVE: TO ENHANCE THE PREDICTION ACCURACY OF HEART DISEASE USING MACHINE LEARNING MODELS OPTIMIZED WITH THE JELLYFISH OPTIMIZATION ALGORITHM (JOA).
- DATASETS: THE STUDY USES THE CLEVELAND AND STATLOG HEART DISEASE DATASETS.
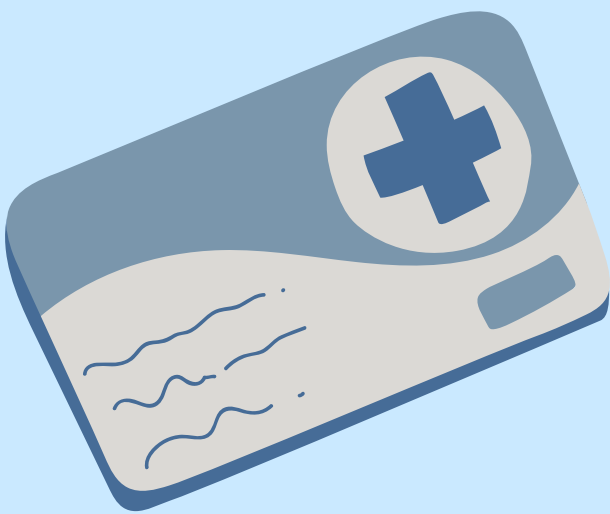
METHODOLOGY

MODELS USED:
SUPPORT VECTOR MACHINE (SVM)
DECISION TREE (DT)
LOGISTIC REGRESSION (LR)
ARTIFICIAL NEURAL NETWORK (ANN)
OPTIMIZATION TECHNIQUE: JELLYFISH OPTIMIZATION ALGORITHM (JOA) IS APPLIED TO IMPROVE THE PERFORMANCE OF THESE MODELS.
DATA PREPROCESSING: INCLUDES HANDLING MISSING VALUES, DATA NORMALIZATION, AND FEATURE SELECTION.

EXPERIMENT SETUP

TRAINING AND TESTING SPLIT: THE DATASETS ARE SPLIT INTO TRAINING AND TESTING SETS TO EVALUATE MODEL PERFORMANCE.
PERFORMANCE METRICS: ACCURACY, PRECISION, RECALL AND F1-SCORE ARE USED TO ASSESS THE MODELS.

CONCLUSION

OUTCOME: THE USE OF JOA FOR OPTIMIZATION LEADS TO BETTER PREDICTIVE PERFORMANCE IN HEART DISEASE DIAGNOSIS.
FUTURE WORK: SUGGESTIONS FOR FURTHER RESEARCH INCLUDE TESTING THE JOA ON OTHER MEDICAL DATASETS AND EXPLORING ITS INTEGRATION WITH DEEP LEARNING MODELS.

RESULTS AND ANALYSIS

COMPARISON OF MODELS:
PERFORMANCE OF TRADITIONAL MODELS VS. JOA-OPTIMIZED MODELS.
VISUAL REPRESENTATION OF RESULTS USING HEATMAPS.
KEY FINDINGS: THE JOA SIGNIFICANTLY IMPROVES THE PREDICTION ACCURACY OF THE MODELS.

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