**INTRODUCTION**

In the Emergency Departments of hospitals, patients are sorted based on their need for immediate medical treatment. This sorting is done according to the urgency or severity of the health conditions of patients. When a patient arrives, an ER (emergency room) nurse performs a brief, focused assessment and assigns the patient a triage acuity level, also known as a triage score. Triage [1] establishes priorities for care and determines the clinical area of treatment. The acuity level is a proxy measure of how long the patient can safely wait for medical evaluation and treatment. For this purpose, healthcare workers categorize them as per their risk level. Priority level 1 patients are critically ill or high-risk category patients and need immediate medical attention to save their life. This is done by nurses or the assigned staff at hospital triage considering their vital signs and clinical observations. Priority level 2 patients are those who need medical attention but can wait as long as 30 minutes for assessment and treatment. These patients are considered medium-risk level patients. Other cases are considered low-risk patients. They can wait for medical help. This type of patient classification is done by considering their basic vital signs and clinical conditions.

Triage is the prioritization of injured or sick individuals based on their need for emergency treatment. Each organization will have its own triage system, which often includes color coded categories. Triage may be used to meet an organization’s short or long-term needs to help determine who gets care first. Based on these results, Machine Learning can determine the patient’s criticality. In this study, basic vital parameters are used for patient classification as input. Medium-risk patients and low-risk patients are considered non-critical patients while high-risk cases are considered critical patients. The vital parameters used are Systolic Blood Pressure (SBP), Diastolic Blood Pressure (DBP), Respiratory Rate (RR), Oxygen saturation (SPO2), Random Blood Sugar (RBS), Temperature, and Pulse Rate (PR). The output is taken as the patient whose condition is critical falls under class 1 and non-critical patients are classified under class 0.

This work focuses on machine learning algorithms to automatically classify critical and non-critical patients based on measured signs. Machine Learning algorithms executed in this work are Gaussian Na¨ıve Bayes Classifier (NBC), Logistic Regression (LR), Support Vector Machine (SVM), K Nearest Neighbours (KNN), and Decision Trees (DTs). All obtained results are compared to evaluate the effectiveness of each method.

The remaining part of the paper is organized as follows: Section II is Literature Survey describing already existing works. Section III is Methodology which highlights the dataset being worked on and the proposed algorithms. Section IV describes the Experimental results that are obtained after building classifiers and discusses the performance evaluation of all classifiers. Section V is the Conclusion that concludes the overall work