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Shri Swami Vivekanand Shikshan Sanstha's  
**Vivekanand College, Kolhapur**  
(An Empowered Autonomous Institute)



## **“Dengue Diagnosis Using K-Nearest Neighbors and Artificial Neural Network”**

DISSERTATION SUBMITTED BY

Miss. Ketaki Dhanaji Desai

For the Award of Degree

**“M.Sc. in Computer Science”**

UNDER THE GUIDANCE OF

Dr. I. K. Mujawar

(Department of Computer Science)

**Year 2024-2025**

*The Dissertation Entitled*

**“Dengue Diagnosis Using K-Nearest Neighbors  
and Artificial Neural Network”**



**Submitted to**

**Shri Swami Vivekanand Shikshan Sanstha's**

**Vivekanand College, Kolhapur**

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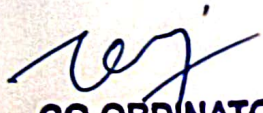
**CERTIFICATE**


This is to certify that the work incorporated in the thesis entitled  
“Dengue Diagnosis Using K-Nearest Neighbors and Artificial Neural  
Network” submitted to Shivaji University by Miss. Ketaki Dhanaji Desai for the  
award of the degree of M. Sc. in the subject of Computer Science was carried out  
by her under my supervision in the Department of Computer Science,  
Vivekanand College, Kolhapur (An Empowered Autonomous Institute). This  
work was not submitted by her to this, or any other University for the award of  
any Degree, Diploma, Associateship or any other similar title.

Place: Kolhapur

Date: 03/05/2025

  
Dr. I. K. Mujawar  
Research Guide

  
CO-ORDINATOR  
M.Sc.(COMPUTER SCIENCE)  
VIVEKANAND COLLEGE, KOLHAPUR  
(EMPOWERED AUTONOMOUS)

  
5/05/25




## **DECLARATION**

I hereby declare that the present research work entitled “Dengue Diagnosis Using K-Nearest Neighbors and Artificial Neural Network” is an original and has been carried out by me under the guidance of Dr. I. K. Mujawar, Assistant Professor, Department of Computer Science, Vivekanand College, Kolhapur for the submission of degree of M. Sc. in Computer Science to Vivekanand College, Kolhapur.

I also declare that to the best of my knowledge the dissertation does not contain any part of any work, which has been submitted for the award of the degree, either in this university or any other university / deemed university without proper citation.

Place: Kolhapur

Date: 03/05/2025

  
**Miss. Ketaki Dhanaji Desai**  
(Research Student)

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striving to improve public health and combat the spread of dengue through innovative scientific solutions.

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*Miss. Ketaki Dhanaji Desai*



*Dedicated*  
*To*  
*My Beloved Parents*

*Mr. Dhanaji B. Desai*

*Mrs. Sangita Dhanaji Desai*

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*Research guide*

*Dr. I. K. Mujawar*

*My Brother and Sister*

*&*

*My Dearest Friends*

## ABSTRACT

Dengue fever is a fast-spreading mosquito-borne disease that affects millions of people every year, especially in tropical and subtropical areas. Early and accurate diagnosis of dengue is very important to reduce its effects and save lives. Traditional methods of diagnosis are often slow and require lab tests, which may not be available in all places. To solve this problem, we have used machine learning techniques in our research to improve the diagnosis of dengue. This research paper focuses on using two popular machine learning algorithms—K-Nearest Neighbors (KNN) and Artificial Neural Networks (ANN)—to detect dengue based on symptoms and patient data. We collected real patient records, including features like body temperature, headache, vomiting, joint pain, and blood test results. These features were used as input to train both algorithms.

The KNN algorithm works by comparing a new patient's data to other known cases and finding the closest matches. It then predicts whether the new patient is likely to have dengue based on its neighbors. This method is simple but very effective when the data is clean and well-organized.

The ANN algorithm is more complex and works like a human brain by learning patterns in the data through layers of interconnected nodes. It helps in understanding hidden relationships in the data and can make more accurate predictions, especially in large datasets.

The KNN algorithm achieved an accuracy of 50%, while the ANN model showed a slight improvement with an accuracy of 55%. To enhance the performance of the ANN model, we experimented with various combinations of loss functions and optimizers. The best results were observed with the use of the Mean Squared Error (MSE) as the loss function and Adaptive Moment Estimation (ADAM) as the optimizer. This combination yielded 55% accuracy, with a precision of 54% and a recall of 82%. The higher recall indicates the model's ability to identify most positive cases, making it a reliable approach for sensitive dengue detection scenarios.

Despite modest accuracy, the research highlights the potential of machine learning in healthcare applications.