PRESIDENCY UNIVERSITY

50 YEARS

FORECAST OF A FLOOD LEVEL IN A RIVER

A PROJECT REPORT

Submitted by

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Under the guidance of,

Dr. Vijaya Kumar A V

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE AND ENGINEERING

PRESIDENCY UNIVERSITY

BENGALURU

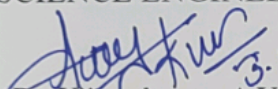DECEMBER 2025

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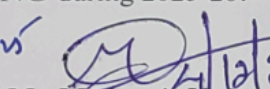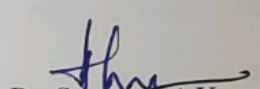Itgalpura, Rajankunte, Yelahanka, Bengaluru – 560064
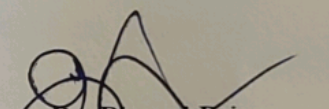
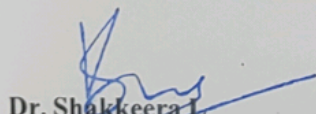## PRESIDENCY SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

BONAFIDE CERTIFICATE

Certified that this report "**Forecast of a flood level in a river**" is a bonafide work of "K. MANOHITH (20221CSE0199),V.SIVANANDAREDDY(20221CSE0245),P.SREEDHARRAO(20221CSE0221)", who have successfully carried out the project work and submitted the report for partial fulfillment of the requirements for the award of the degree of BACHELOR OF TECHNOLOGY in COMPUTER SCIENCE ENGINEERING during 2025-26.
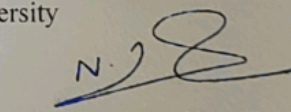
Dr. Vijaya kumar A V
Project Guide
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Mr. Muthuraju V
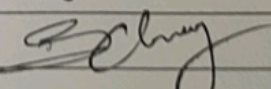Program Project
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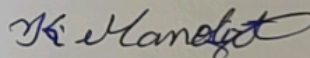| Sl. no.	Name	Signature	Date
1	Dr. Sharmasth Vali Y		3/12/25
2	Mr. Sriram Parabrahmachari		4/12/25

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DECLARATION

We the students of final year B. Tech in COMPUTER SCIENCE ENGINEERING at Presidency University, Bengaluru, named K. MANOHITH, V. SIVANANDAREDDY, P. SREEDHAR RAO, hereby declare that the project work titled **"FORECAST OF A FLOOD LEVEL IN A RIVER"** has been independently carried out by us and submitted in partial fulfillment for the award of the degree of B. Tech in COMPUTER SCIENCE ENGINEERING during the academic year of 2025-26. Further, the matter embodied in the project has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.
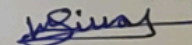
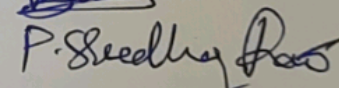|		
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ACKNOWLEDGEMENT

Abstract

Floods are one of the most common and destructive natural disasters that severely affect human lives and infrastructures, and lead to a number of catastrophic consequences on the economics of the communities and the areas in question. In fact, the early warning and disaster preparedness is dependent on proper and timely monitoring of the rising water. The present project is focused on the design and development of an IoT-based flood level forecasting system that will allow real-time tracking of the water level in the river with the help of the relatively inexpensive sensors and communication modules.

The main element of this system is the ESP32 microcontroller where all the calculations are centralized. The module has an ultrasonic sensor (HC-SR04) which is utilised in the continuous mode to measure the distance between the sensor and the surface of the water. Based on the measured distance, the system computes the level of the risk of flood, and categorizes it into three levels, namely, No Flood Detected, Flood About to Be Detected, and Flood Detected. The various phases of the flood lead to various degrees of response:

The present position of the flood is presented on 16 x 2 I2C LCD and the distance that has been measured, and red and green LEDs are employed to indicate that conditions are safe or dangerous. A buzzer can also be employed to issue a verbal warning in case of a possible or actual situation of flood. The system is also characterized by automatic SMS notifications through SIM900A GSM module which are activated when the water level exceeds the danger points. Furthermore, all the information related to the water level is concurrently kept on ThingSpeak cloud service so that one can conveniently access, analyze, and visualize the statistics at any point.

Such system can be local alerted and remotely aware, therefore, making this system ideal to be deployed in such regions as rural or flood prone ones. A combination of the hardware devices and the wireless communication and cloud technologies make the project a scalable, cost-effective, and efficient tool of flood level prediction and early warning.

The proposed system will become a significant assistance in reducing the risks of disasters, thereby facilitating the evacuation and mobilizing of resources in time, which will at some point facilitate the mitigation of the possible damages and enhance the safety of the population. It is a good example of how IoT technology can be applied in addressing environmental issues and is also a step towards creating smarter and more resilient communities