



**PRESIDENCY UNIVERSITY**

Private University Estd. in Karnataka State by Act No. 41 of 2013  
Itgalpura, Rajankunte, Yelahanka, Bengaluru – 560064



# **FORECAST OF A FLOOD LEVEL IN A RIVER**

**A PROJECT REPORT**

*Submitted by*

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**BACHELOR OF TECHNOLOGY**

**IN**

**COMPUTER SCIENCE AND ENGINEERING**

**PRESIDENCY UNIVERSITY**

**BENGALURU**

**DECEMBER 2025**



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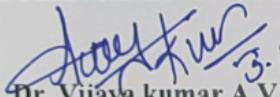
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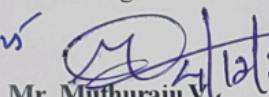


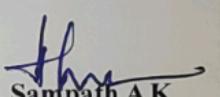
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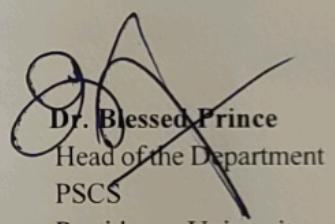
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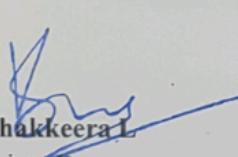
Certified that this report “**Forecast of a flood level in a river**” is a bonafide work of “K. MANOHITH (20221CSE0199), V. SIVANANDAREDDY(20221CSE0245), P. SREEDHARAO(20221CSE0221)”, who have successfully carried out the project work and submitted the report for partial fulfillment of the requirements for the award of the degree of BACHELOR OF TECHNOLOGY in COMPUTER SCIENCE ENGINEERING during 2025-26.

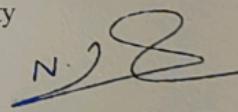
  
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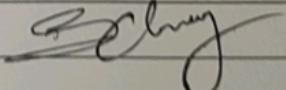
  
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2	Mr. Sriram Parabrahmachari		4/12/25

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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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DATE:

## **ACKNOWLEDGEMENT**

For completing this project work, we have received the support and the guidance from many people whom I would like to mention with deep sense of gratitude and indebtedness. We extend our gratitude to our beloved **Chancellor, Pro-Vice Chancellor, and Registrar** for their support and encouragement in completion of the project.

I would like to sincerely thank my internal guide **Dr. Vijaya Kumar A V, Professor**, Presidency School of Computer Science and Engineering, Presidency University, for his/her moral support, motivation, timely guidance and encouragement provided to us during the period of our project work.

I am also thankful to **Dr. Blessed Prince, Professor, Head of the Department, Presidency School of Computer Science and Engineering** Presidency University, for his mentorship and encouragement.

We express our cordial thanks to **Dr. Duraipandian N**, Dean PSCS & PSIS, **Dr. Shakkeera L**, Associate Dean, Presidency School of computer Science and Engineering and the Management of Presidency University for providing the required facilities and intellectually stimulating environment that aided in the completion of my project work.

We are grateful to **Dr. Sampath A K, and Dr. Geetha A, PSCS** Project Coordinators, **Mr. Muthuraju V, Program Project Coordinator**, Presidency School of Computer Science and Engineering, for facilitating problem statements, coordinating reviews, monitoring progress, and providing their valuable support and guidance.

We are also grateful to Teaching and Non-Teaching staff of Presidency School of Computer Science and Engineering and also staff from other departments who have extended their valuable help and cooperation.

K. MANOHITH  
V. SIVANANDA REDDY  
P. SREEDHAR RAO

## 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