

An Abstract
On

Integrated approach to assess the quality of river

By

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(Affiliated to JNTUA and Approved by AICTE, New Delhi)
(Accredited by NAAC With 'A' Grade & Accredited by NBA (EEE, ECE & CSE))

2025-26

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ABSTRACT

Water pollution is a critical concern affecting ecosystems and water quality. This project presents an integrated approach to assess river quality using automated detection of pollutants and objects present in water. The system assess various pollution types, including acid pollution, dead animals, eutrophication, fish oil, and plastic pollution, along with objects like bottles, cardboard, glass, metal, leaves, paper, trash, and water containers.

YOLOv10, an advanced object detection algorithm, is employed to identify these pollutants and objects in images of river water. The system is implemented using a Flask framework with a front-end developed in HTML, CSS, and JavaScript, and a Python back-end for processing. Users can register, log in, and access a detection module that analyzes uploaded images for pollutants.

Detected pollution instances can trigger automated notifications to the administrator, enabling effective monitoring. This approach allows systematic evaluation of water quality, highlighting areas affected by different types of contamination. The methodology can be extended to other water sources and environmental studies.