# VISVESVARAYATECHNOLOGICAL UNIVERSITY

**Jnana Sangama,Belgaum-590014**

**A Project Report**

**on**

# "PROFILING AQUATIC DIFFUSION PROCESS USING ROBOTIC SENSOR NETWORKS"

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**Submitted in partial fulfilment of the requirement for the award of the degree**

**BACHELOR OF ENGINEERING**

**in**

**ELECTRONICS & COMMUNICATION ENGINEERING**

**by**


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# ABSTRACT

Water resources and aquatic ecosystems are facing increasing threats from climate change, improper waste disposal, and oil spill incidents. It is of great interest to deploy mobile sensors to detect and monitor certain diffusion processes (e.g., chemical pollutants) that are harmful to aquatic environments. In this paper, we propose an accuracy-aware diffusion process profiling approach using smart aquatic mobile sensors such as robotic fish. In our approach, the robotic sensors collaboratively profile the characteristics of a diffusion process including source location, discharged substance amount, and its evolution over time. In particular, the robotic sensors reposition themselves to progressively improve the profiling accuracy. We formulate a novel movement scheduling problem that aims to maximize the profiling accuracy subject to the limited sensor mobility and energy budget.