

TITLE: MODULE FOR DIATOMS RECOGNITION

ABSTRACT

Rapid urbanization and economic development have resulted in unfavourable changes in the hydrology and ecology of freshwater systems. Changes in environmental conditions, water temperature, dissolved oxygen, and food resources exert direct control on the population dynamics of aquatic organisms, which gives rise to characteristic biological communities within different ecosystems. However, pollution and other human activities also disturb these community profiles significantly. In order to monitor the water pollution levels, the water sample is collected for laboratory analysis. This is a complex task which requires significant amount of time as well as human efforts.

Diatoms are important contributors to the primary production in aquatic ecosystems. They are eukaryotic algae, commonly unicellular, found in oceans, waterways and soils. They are significant indicators of the environmental integrity. Diatoms are sensitive to very subtle changes in environmental conditions or disturbances that may not visibly affect other communities. The proposed system consists of a module which recognizes the diatoms in the given water sample and identifies the species of the microalgae through image processing. Apart from the software module it also provides the analysis based on type of diatoms and displays the percent rate of contamination. Furthermore, this module can be made portable using a simple foldscope attached to the mobile camera.