"FloBot": A Mobile Portable and Floating Real Time Data Acquisition Device for Lake Water Quality Monitoring and Mapping

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Water bodies are life lines of cities. However, water quality has become a global issue. Bangalore has become one of its victims. Bangalore was once called the “city of lakes”. “Records show that till 1960 there were 262 water bodies in Bangalore. Today the figures have declined to about 81 of which 34 are recognized as live lakes. These figures denote a reduction of lakes as high as 69.4%”. (www.karnataka.gov.in/Parisaramahiti/Pages/Lakes-of-Bangalore.aspx). Due to Bangalore’s emergence as “Silicon Valley of India”, people migrated to Bangalore in search of jobs. Due to this large influx of population and extremely poor civic planning, untreated sewage is dumped in lakes. In areas where Sewage Treatment Plants (STP) have been built, they have limited capacity. In addition to this, industries dump effluents into the water bodies. Due to lack of real-time monitoring of lakes, the dumping of sewage and industrial effluents persists unabatedly. We have built a portable mobile and floating device (called “FLoBoT”) that can monitor the pollution levels of lakes in real-time. Our device uses off the shelf electronics combined with good quality sensors. The entire device can float on a lake and transmit data using ubiquitous cell phone networks (via SMS) and upload information to an IoT platform via GPRS. The data is tagged with GPS coordinates and are also time stamped, which enables us represent the pollution level on heatmaps. We monitor the following parameters in real-time: • Dissolved Oxygen • Electric Conductivity • pH • Water temperature • Total Dissolved Solids • Salinity • Specific Gravity We have tested this device on 8 different lakes; some that were extremely polluted and some that were relatively clean.

Awards Won:
Second Award of $2,000
U.S. Agency for International Development: USAID Science for Development First Place Award of $5,000.