Development of Dengue Outbreak Monitoring System using GIS and Mobile Reporting

Junrie B. Matias (1), Jesterlyn Q. Timosan (1)

[1] College of Computing and Information Sciences, Caraga State University, Ampayon, Butuan City, Philippines.

Email: jbmatias@carsu.edu.ph; jqtimosan@carsu.edu.ph

Abstract: Dengue is a devastating viral disease, transmitted by mosquitoes, and causing sudden fever and acute pains in the joints. The condition is life-threatening hemorrhagic fever, resulting in bleeding, low levels of blood platelets and blood plasma leakage or into dengue shock syndrome where dangerously low blood pressure occurs. Dengue outbreaks are prevalent, and the number of cases has increased dramatically since the 1960s, with between 60 and 100 million people infected yearly. Dengue has become a global problem, especially in a tropical country like the Philippines, where an average of 170,503 infections and 750 deaths were officially reported annually from 2010 to 2014. As a result, this work proposes to design and develop an online monitoring system through a geographical information system and mobile reporting. An Android-based application is created to enable agencies and users like teachers from the department of education to report their students who are confirmed to be infected dengue.   The reports are aggregated in the server where the city health officials can monitor the severity of the disease and can respond immediately if an outbreak occurs. The status of every dengue-affected area or barangay is mapped using web-based GIS, and colored or labeled depending on its levels. Further, personnel from the department of health and teachers from the department of education were surveyed and interviewed to substantiate the usefulness and effectiveness of the system. Hence, the teachers are tasked by the government to monitor and report the cases of dengue in their class. Results show that the system is indeed helpful and easy to use. The mapping system is beneficial in monitoring the levels of emergency, and the city health office could respond on time if an outbreak occurs.

Keywords: Web GIS, Android-based Mobile Reporting, Dengue Outbreak Monitoring