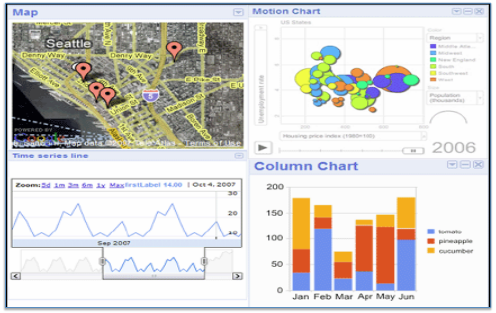
iSENSE
Internet System for Networked Sensor Experimentation

Project Summary

The Internet System for Networked Sensor Experimentation (iSENSE) is a web-based data collection, aggregation and visualization tool that allows educators and students to share real-world scientific data and draw meaningful conclusions about regional, national, and global phenomena. This system allows users to view, graph, analyze and export data from individual sensors (temperature, light, sound, humidity, pH, and other sensors) as well as combining data from multiple sensors.



Purpose and Goals

- To allow geographically widespread users to collect, share, visualize and manipulate real-world scientific data online.
- To allow educators and students to collaborate on scientific experiments in an interactive and fun way.
- To assist teachers and engage students in developing science projects on topics ranging from human health and urban transportation to environmental science and energy conservation.

This educational technology was jointly developed by University of Massachusetts Lowell and Machine Science Inc. and supported by the National Science Foundation's "Advanced Learning Technologies" and "Commonwealth Alliance for IT Education" programs (grants DRL-0735597, DRL-0735592 and CNS-0837739).

University of Massachusetts Lowell: Fred Martin, Sarah Kuhn, and Michelle Scribner-MacLean
Machine Science Inc.: Sam Christy and Ivan Rudnicki

Technical Approach

The iSENSE system was inspired by cloud computing and mashup technologies. It leverages Google Maps, the Google Visualization API, and makes extensive use of free and open source products (Linux, Java, My SQL, Apache, jQuery, JavaScript, and more).

Users interact with the system through the iSENSE web site where they can create an experiment, contribute scientific data to existing experiment, browse data collected by other users, and create dynamic visual representations using multiple datasets in the form of maps, graphs, and charts. To complement the web system, there is a PINPoint data gatherer which is a hand-held battery-powered device which includes a GPS, accelerometer, light, temperature, sound sensors and a port for an external sensor.

My Contribution

During my participation in this project, I was able to contribute to the development of the Histogram module in the Data Analysis and Visualization Client using FOSS JQuery, JavaScript, CSS and HTML.

The purpose of the Histogram Chart is to provide additional visualization and analytical tool for users to present scientific datasets in a more convenient and understandable form. This visualization tool displays rectangular bars in variation of colors that correspond to tabulated frequencies of each value or range of values in a dataset.

For more information on the iSENSE system visit ***isenseproject.org***

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