CalFloraViz: A web-based client-server interface for mapping California flora observation data

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The duties of my research assistantship were to create, from scratch, a web-map that would give users the ability to explore, spatially and temporally, the geo-referenced plant samples in a dataset provided by the Consortium of California Herbaria. However, at the start, I had almost no programming skills, learning ActionScript 3 for Adobe Flash from the ground up. By the end of my first summer and with help from Scott Pezanowski and Craig McCabe, we had created a functional, yet simple, interface for generating graduated circle maps based on species selections and temporal filtering. Having developed considerably from its first form, CalFloraViz has become a strong map tool that allows easy query and display of the spatial history of a large plant sample collection. The underlying database, housed on GeoVISTA servers, contains over 377,000 unique, spatially referenced samples collected in California between 1860 and 2007. Handling so many records with client-server interactions over the internet can be slow and cumbersome (both practically and visually). Our solution was to aggregate sample point locations to relevant regions (as polygons); in this case, Jepson sub-ecoregions. Performing database pre-aggregation on the server-side made responses to client requests for data much faster. Interface design focused on having the user first work through the phylogenetic hierarchy to select a family, genus or species and apply temporal filtering, generating maps featuring Coxcombs (or Polar Area Charts) that bin data by months. This way, users can explore seasonal patterns in the collection. Another key feature provides web links to plant information on Wikipedia or on the California Plant Names Index. Using the Google Map API allows users to zoom in and generate maps with individual plant sample records. Please click on the image below for a video tour of CalFloraViz.