Interactive and Immersive Visualizations for Human Environment Systems Data

HTML5 Webpages: Alternative Futures Modeling



https://hes.boisestate.edu/test/

The Wordpress environment Boise State's hosting integrated webpages imposes some restrictions, but does support plugins CSS enable that and fully Javascript for interactive visualizations. In example, selecting this historical weather from one projected and year population from another displays a precomputed set of model results, stored as images. There are 49

unique combinations, which gives the viewer the impression of custom generation, though these appear to Wordpress and the browser as a set of static webpages.

A more robustly interactive, dynamically drawn webpage uses cursor highlighting to drive what plotted and mapped data



appears. This approach uses external drawing D3.js and libraries dygraphs.js, dynamic jQuery.js trom query and map tiled provided by the Google Maps API. Ongoing work will integrate these libraries with external Wordpress the environment.

http://visualize.boisestate.edu/envision/envision-plots.html

Treasure Valley Project

Immersive Environments: Human Environment Systems



The 2014-15 CI-Viz iSEED produced 3D models using social and physical data. Urban and environmental scenes are generated within CityEngine using GIS data from various sources. Procedural modeling creates realistic 3D views of alternative scenarios predicted by the Envision integrated planning and environment assessment tool. These results are integrated with the Unity 3D gaming engine for immersive manipulation.

We've integrated low cost commercial hardware solutions (Leap Motion Controller, Kinect Motion Sensor, Intel RealSense, and ASUS Xtion PRO LIVE) for gesture-based visualization control. The Oculus Rift and Samsung Gear VR provide immersive virtual reality combining head tracking and close-to-eye wide angle display. Finally, Android devices augment reality by overlaying rendered 3D objects on a camera video stream to react to a user's perspective.



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Heat Maps: Wildlands and Recreation



http://visualize.boisestate.edu/ohv/ohv-heat-maps.html

The Wildlands and Recreation research team collected close to one hundred GPS tracks of off-highway vehicle riders in Idaho's Owyhee County. This heat map includes 193,382 bread crumb points spaced temporally every 5 seconds. Several important features, like trail use and common stopping points are easy to identify in this visualization. Using jQuery.js and the Google Maps API, this dynamic map supports zooming and satellite, road/trail, and terrain base maps. The web version provides custom tools for filtering the displayed tracks and changing the drawing parameters to develop and test hypotheses using track features.

More Information:

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