

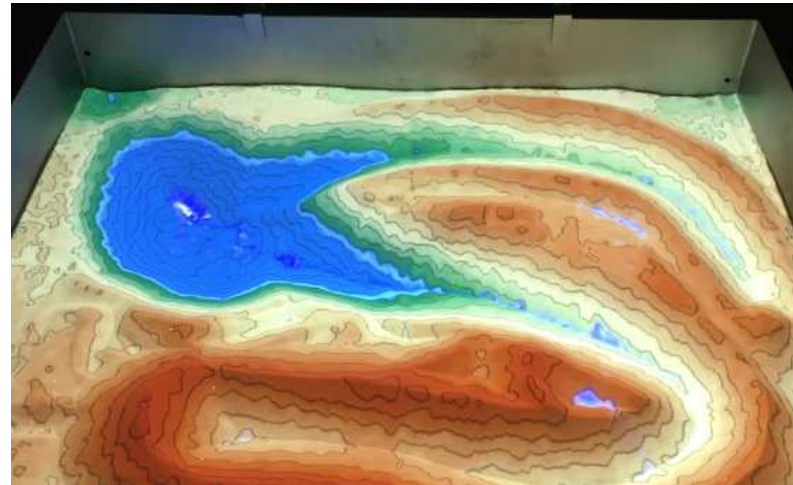
Augmented Reality Sand Box

Real, Visual, and Interactive Sand with Virtual Topography

1. Shape real sand to create topography models
2. Use Microsoft Kinect 3D camera to create a Digital Elevation Model (DEM) of the sand
3. Overlay 2D DEM on 3D topography model using a projector (Real Time)
4. Results
 - Real time, interactive elevation map
 - Topographic contour lines
 - Simulated rain/water

Resolution of the Sand Box

- Horizontal: $\pm 1-2\text{mm}$
- Vertical: $\pm 3\text{mm}$



Geomatics Engineering Senior Project

- Prototype built by Andres Sanchez as his senior project (December 2015 graduate of Geomatics Engineering, Lyles College of Engineering) under direction of Professor Scott Peterson, Assistant Professor, Geomatics Engineering Department
- A special thanks to UC Davis' WM KeckCAVES, UC Davis Tahoe Environmental Research Center, Lawrence Hall of Science, and ECHO Lake Aquarium and Science Center

Earth Science Education Applications

- Geographic feature recognition
- Geologic feature recognition
- Hydrologic concepts
- How to read a contour map
- Meaning and interpretation of contour lines
- Meaning and Interpretation of Elevation Color Maps
- Watershed understanding and analysis
- Catchment areas
- Levee understanding and design

Future Applications

- Interactive therapy