Liquid Galaxy Visualization of Instituto Moreira Salles' photographic collections

This poster presents the first results of an ongoing project using Liquid Galaxy (LG) platform with a particular interest in its applications for panoramic geographic-based visualization within the scope of a research agreement between two Brazilian institutions. One of the main goals of this agreement is to research and develop immersive panoramic and geospatial navigation interfaces using LG platform to present Instituto Moreira Salles' (IMS) photographic collections.

Marc Ferrez photographs at Instituto Moreira Salles

IMS is an important institution in the Brazilian cultural scenario. It holds cultural heritage collections in four areas: photography, iconography (prints and drawings), music and literature. The photographic collection of about 2 million images is distributed among 52 collections, often the complete works of its photographers, representing a relevant set of the nineteenth and twentieth-century photography in Brazil.

Marc Ferrez is the most significant nineteenth-century photographer at IMS. His work comprises a collection of approximately 7 thousand photographs. Born in Rio de Janeiro in 1843 descended from a French family, Ferrez is best known for shooting natural and landscapes and urban scenes of his hometown. His work documents Rio's transformation over time and represents pieces of evidence of urbanization and industrial development.

Panorama of Rio de Janeiro, seeing Glória and Catete in a photograph taken from Santa Teresa, c. 1885. Marc Ferrez/ Gilberto Ferrez Collection / IMS.

The presence of known natural and architectural landmarks in his photographs (mainly outdoor views) makes it possible to estimate the location from which they were taken. In this sense, the Liquid Galaxy platform offers an opportunity to engage with Ferrez's work through geographic-based visualizations.

The Liquid Galaxy platform

LG is a multi-display data visualization platform that enables immersive panoramic experience through interactive tours using KML data, videos, photos, and 2D and 3D graphics. It's applications cover a large range of markets and industries, from GIS consulting to museums and research. We are interested in how LG can be used as a medium to explore photographic collections with a particular attention to its geospatial features over time.

LG standard setup includes 7 integrated HDTVs screens resulting in a wide FoV display with a high definition resolution, a touchscreen, and a 3D navigation controller.

LG was originally developed by Google as an open source project to showcase Google's geospatial technologies but has been extended by End Point Corporation to become a more general data visualization tool. In 2017, End Point donated an LG installation for research purposes and, in 2018, a research agreement was signed aiming IMS's photographic collection.

First demo and LG functionalities

For a first demo, we selected ten outdoor photos of Ferrez and manually estimated the positioning from where they were taken. Using Google Earth (GE) we set PhotoOverlay parameters to be exported for each image as KML files. Then, using LG authoring CMS we created a presentation tour to visualize the nineteenth-century photographs and metadata over the actual urban landscape, generated by GE data in the background. The demo fulfills the task of comparing the same view in different periods of time.

Layout for a scene on LG including different assets: on the background, GE shows a KML file with a PhotoOverlay image (a geolocated photograph); on the foreground, 2D graphics shows a metadata infobox and a high-resolution version of the Ferrez's photograph.

Once the tour is finished, the guest can play and interact with it using the touchscreen and the 3D controller. The touchscreen shows a grid of thumbnail scenes, each one corresponding to a photo taken in a different place in Rio. The joystick controller enables 6-axis navigation within a scene. In this demo, guests are invited to use the controller to navigate GE while comparing the current view of the city with the past view registered by the photographer. A video of the demo can be watched on **https://youtu.be/yZpTpdq-j14**.

LG's touchscreen and 3D controller.

Considerations and future work

We believe LG platform can be approached as a geographic-based visualization interface for engaging with photographic collections. Positioning photographs in space and comparing urban views over time (the historical past and the current time) comprise cognitive tasks that can potentially bring new meanings to the photographs being visualized in LG.

To provide effective and productive applications, however, the thorough understanding of which is the targeted audience seems indispensable. As such, we plan to conduct controlled experiments, observing the reactions of different types of guests.

References

Keyhole Markup Language developer's guide
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Google Earth Documentation
<https://www.google.com/earth/outreach/learn/>

Instituto Moreira Salles' Photographic Collections
<https://ims.com.br/acervos/fotografia/>

Liquid Galaxy by End Point
<https://liquidgalaxy.endpoint.com/>