



MoonTrek AR

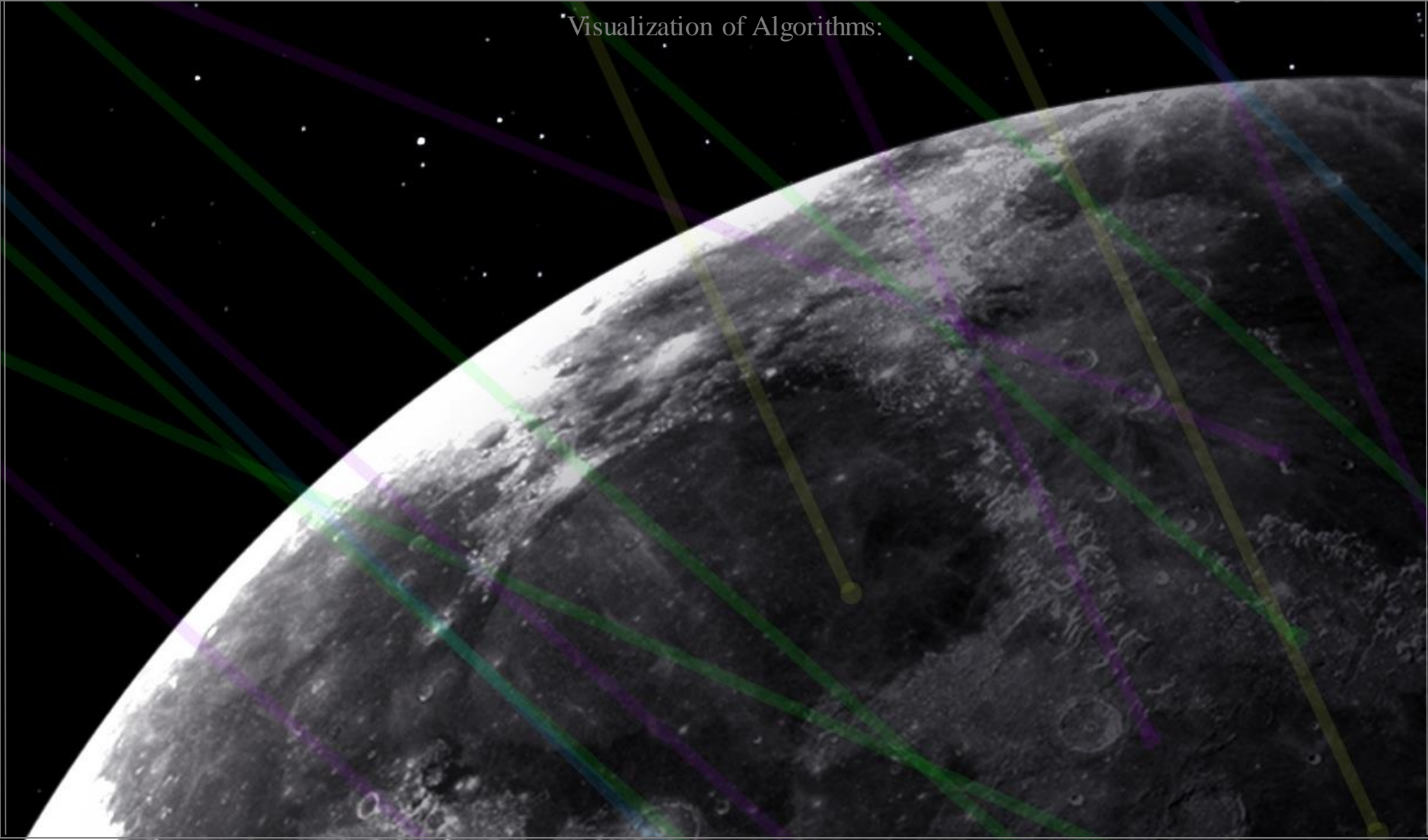
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Background & Objectives

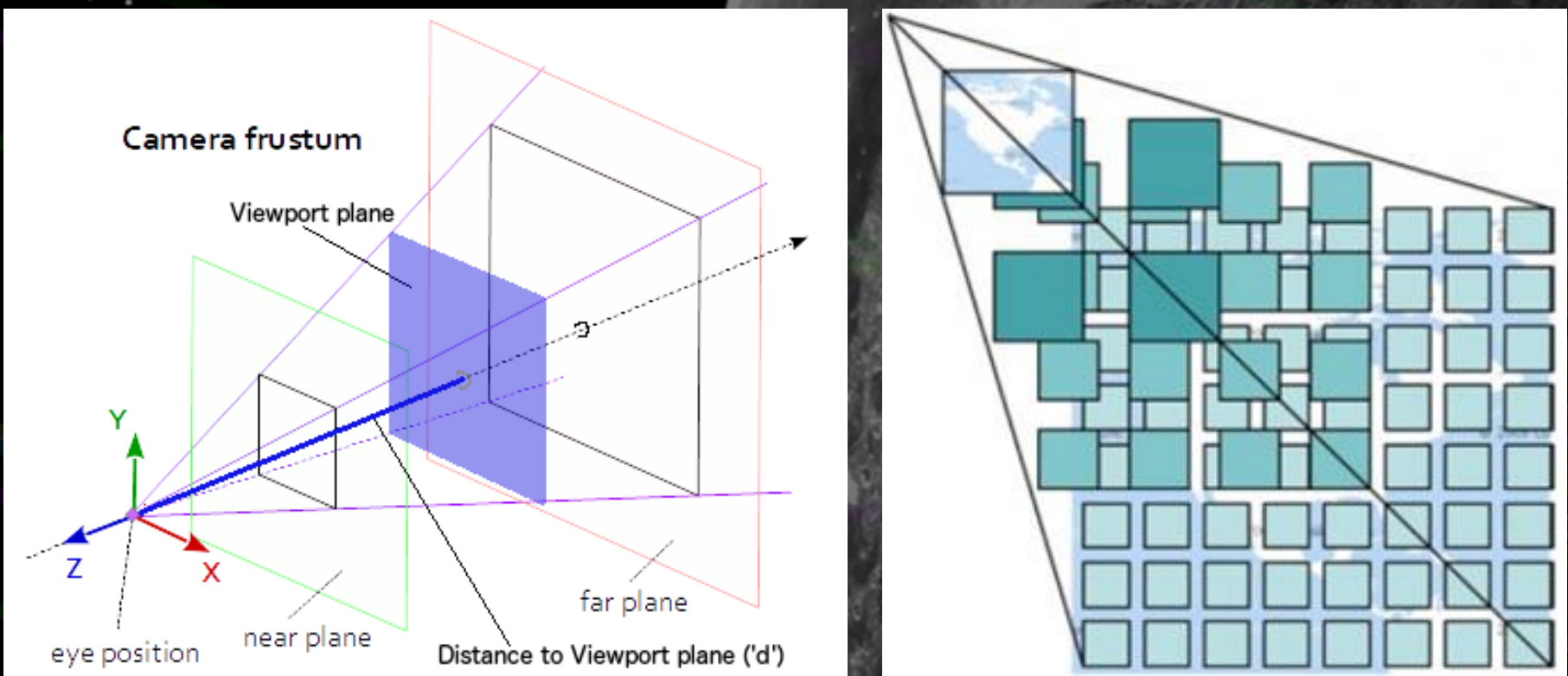
Jet Propulsion Laboratory partnered with CSULA aim to build a web application that seeks to enhance public engagement in lunar exploration by exploring the Moon through augmented reality. When images from a telescope are routed to a laptop or a smartphone, users will have the ability to view a version of their image annotated with various useful and interesting data - including lunar features and landmarks, local temperature, chemical makeup of the soil or any available information the user chooses.



- Building off the context aware image registration algorithm the previous team built, our current team aims to enhance and implement the following:
- Allow the placement and opacity control of multiple overlays on the user's image
 - Implement infinite zoom on the user's image
 - Improve efficiency and accuracy of the image registration process
 - Add craters, maria, and landing sites as points of interest
 - Allow for registration of a live video feed

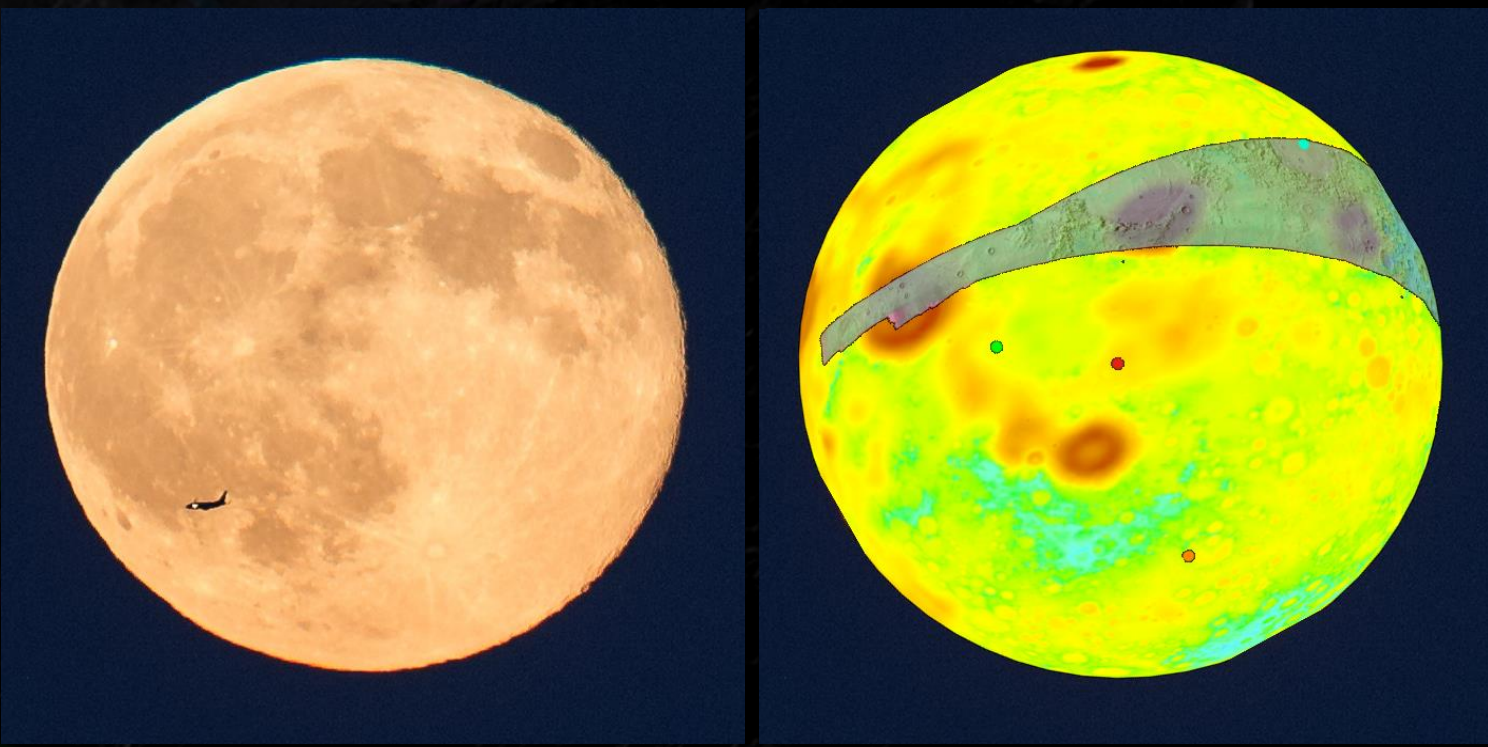
Results

Infinite Zoom



Zoom is done by narrowing the field of view. As the user zooms in, the Web Map Tile Service loads in the higher resolution tiles

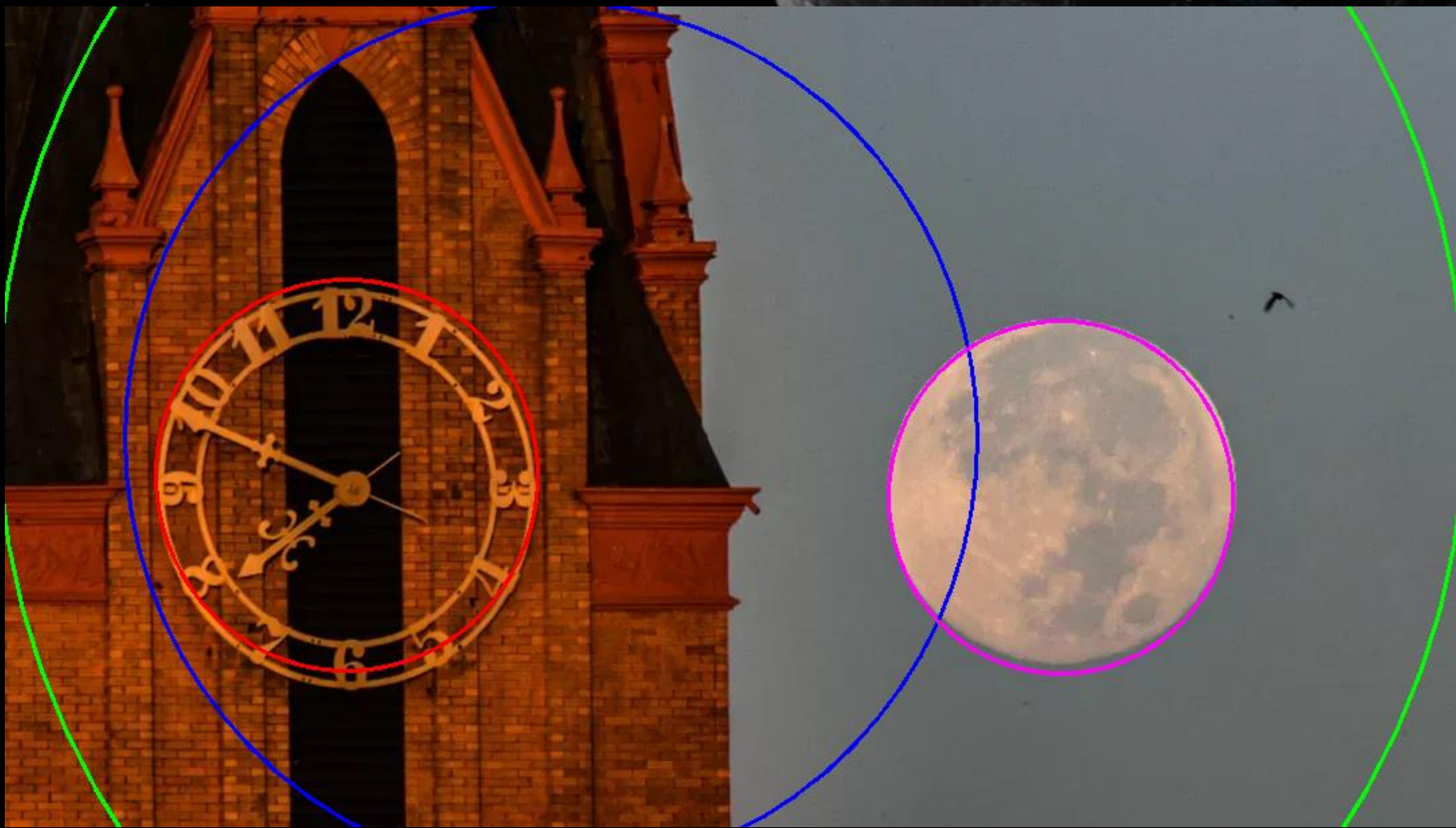
Multiple Layers



Before and after overlays are applied. Overlays: Kaguya LGM2011 Surface Gravity, Colorized and Apollo 15 Metric Cam DEM, ColorHillshade

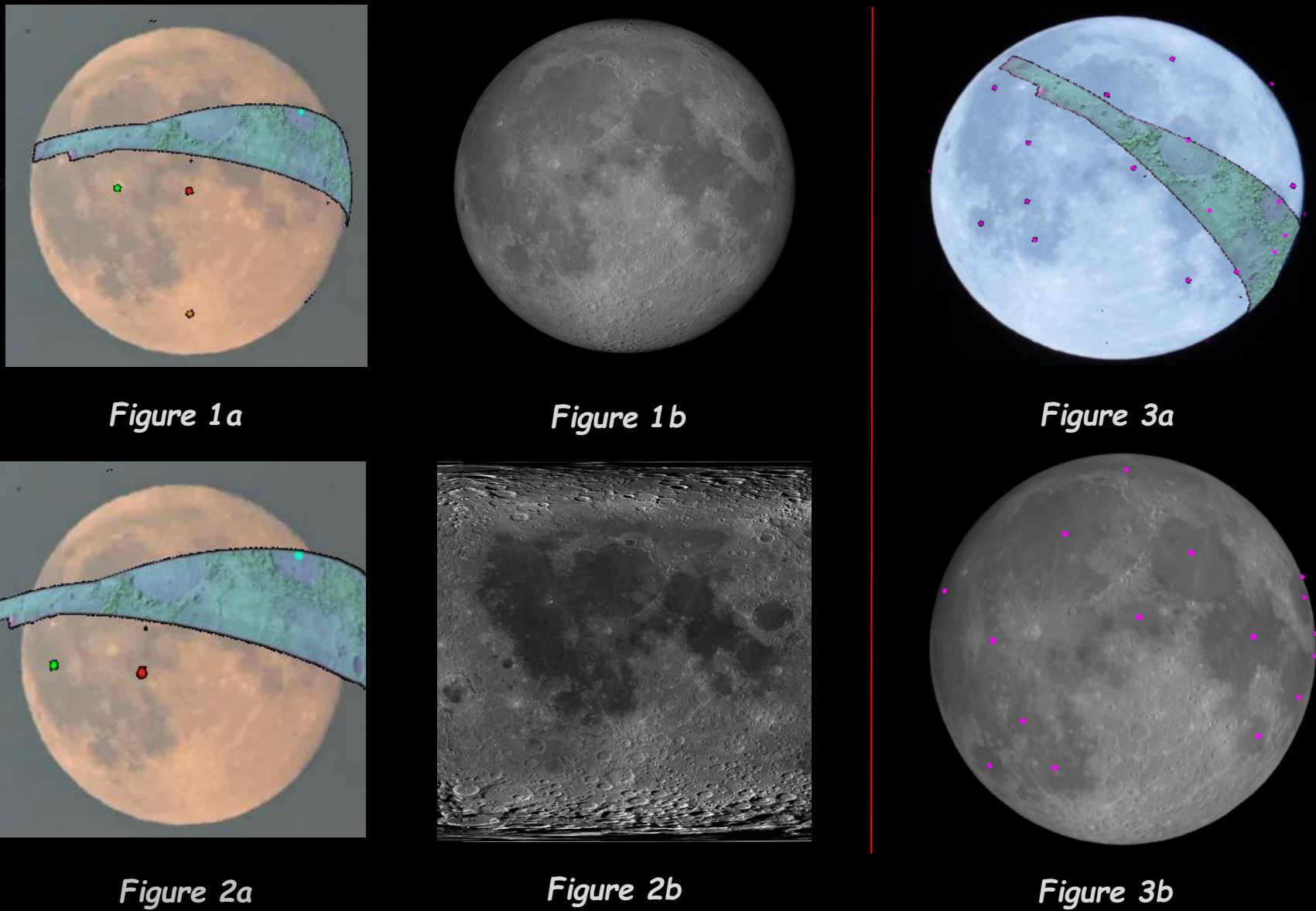


Circle Detection



Shows the improvement of moon circle detection algorithm with different implementation and optimization. Pink circle is the best one.

Context Aware



Figures 1a and 2a display results from context-aware and static image registrations, respectively, with 1b and 2b as their reference images.

Figure 3a and 3b illustrate the points of interest in both the user image and generated image.

TECHNOLOGIES

