



VR-Planets : a 3D immersive application for real-time flythrough images of planetary surfaces

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During the last two decades, a fleet of planetary probes has acquired several hundred gigabytes of images of planetary surfaces. Mars has been particularly well covered thanks to the Mars Global Surveyor, Mars Express and Mars Reconnaissance Orbiter spacecrafts. HRSC, CTX, HiRISE instruments allowed the computation of Digital Elevation Models with a resolution from hundreds of meters up to 1 meter per pixel, and corresponding orthoimages with a resolution from few hundred of meters up to 25 centimeters per pixel. The integration of such huge data sets into a system allowing user-friendly manipulation either for scientific investigation or for public outreach can represent a real challenge. We are investigating how innovative tools can be used to freely fly over reconstructed landscapes in real time, using technologies derived from the game industry and virtual reality. We have developed an application based on a game engine, using planetary data, to immerse users in real martian landscapes. The user can freely navigate in each scene at full spatial resolution using a game controller. The actual rendering is compatible with several visualization devices such as 3D active screen, virtual reality headsets (Oculus Rift), and android devices.