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Geographical Data Visualization Using Video Games Technologies

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Abstract : In this paper, we present the advances corresponding to the implementation of a strategy to visualize geographical data using a Software Development Kit (SDK) for video games. We use multispectral images from Landsat 7 platform and Laser Imaging Detection and Ranging (LIDAR) data from The National Institute of Geography and Statistics of Mexican (INEGI). We select a place of interest to visualize from Landsat platform and make some processing to the image (rotations, atmospheric correction and enhancement). The resulting image will be our gray scale color-map to fusion with the LIDAR data, which was selected using the same coordinates than in Landsat. The LIDAR data is translated to 8-bit raw data. Both images are fused in a software developed using Unity (an SDK employed for video games). The resulting image is then displayed and can be explored moving around. The idea is the software could be used for students of geology and geophysics at the Engineering School of the National University of Mexico. They will download the software and images corresponding to a geological place of interest to a smartphone and could virtually visit and explore the site with a virtual reality visor such as Google cardboard.

Keywords : virtual reality, interactive technologies, geographical data visualization, video games technologies, educational material
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