

Gnss Aided Photogrammetry for Digital Mapping

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Abstract : This research work based on GNSS-Aided Photogrammetry for Digital Mapping. It focuses on topographic survey of an area or site which is to be used in future Planning & development (P&D) or can be used for further, examination, exploration, research and inspection. Survey and Mapping in hard-to-access and hazardous areas are very difficult by using traditional techniques and methodologies; as well it is time consuming, labor intensive and has less precision with limited data. In comparison with the advance techniques it is saving with less manpower and provides more precise output with a wide variety of multiple data sets. In this experimentation, Aerial Photogrammetry technique is used where an UAV flies over an area and captures geocoded images and makes a Three-Dimensional Model (3-D Model), UAV operates on a user specified path or area with various parameters; Flight altitude, Ground sampling distance (GSD), Image overlapping, Camera angle etc. For ground controlling, a network of points on the ground would be observed as a Ground Control point (GCP) using Differential Global Positioning System (DGPS) in PPK or RTK mode. Furthermore, that raw data collected by UAV and DGPS will be processed in various Digital image processing programs and Computer Aided Design software. From which as an output we obtain Points Dense Cloud, Digital Elevation Model (DEM) and Ortho-photo. The imagery is converted into geospatial data by digitizing over Ortho-photo, DEM is further converted into Digital Terrain Model (DTM) for contour generation or digital surface. As a result, we get Digital Map of area to be surveyed. In conclusion, we compared processed data with exact measurements taken on site. The error will be accepted if the amount of error is not breached from survey accuracy limits set by concerned institutions.

Keywords : photogrammetry, post processing kinematics, real time kinematics, manual data inquiry

Conference Title : ICGPRS 2024 : International Conference on Geomatics, Photogrammetry and Remote Sensing

Conference Location : Athens, Greece

Conference Dates : October 17-18, 2024