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# goGPS Open Source GNSS Software for Quasi-Static Applications: Latest Developments and Performance Tests

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goGPS is an open source GNSS software written in MATLAB. Originally, the software was based on a Kalman Filter estimation. In the last two years, it was re-engineered from scratch focusing on quasi-static (slow moving) station processing and switching to multi-epoch least squares estimation using undifferenced multi-GNSS observations. Initially operating just in PPP, the new version was recently extended to process networks of GNSS stations in relative mode. Beside being suited to process data from high-end geodetic receivers, the software maintains its original focus on low-cost GNSS devices. Particular care has been devoted to the automatic retrieval of the necessary resources for the processing and computational optimization. Furthermore, the possibility to process data with a custom parallelism has been added. Finally, a simple processing programming language has been developed to simplify the automatization of the processing of large amounts of data. We present the chosen stochastic model, the corrections model used, the implemented outlier detection and/or observations reweight strategies and software implementation. Performances for both estimated positions and tropospheric products against official IGS solutions are shown. Finally, the obtainable results using a variety of different GNSS receivers and antennas are presented. Performance of single-frequency and multi-frequency low-cost mass-market receivers and receivers embedded in smart devices are evaluated against geodetic grade ones.