Using goGPS software with a multi-antenna GPS system to improve navigation with low-cost receivers

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goGPS is a free and open source software package designed to enhance the accuracy of single frequency low-cost GPS devices by employing an extended Kalman filter. This filter can be applied either in post-processing or in real-time and it is specifically tailored for addressing the issues related to low-cost GPS receivers.

To further enhance the accuracy of kinematic positioning and to jointly estimate the rover velocity and attitude, in the present work a multi-antenna approach has been investigated and integrated into the goGPS Kalman filter. In this approach the known and fixed geometry of a cluster of low-cost antennas is used to constrain the solution.

The improvements obtained by the proposed technique are evaluated with the use of three u-blox LEA-4T receivers in a test scenario.