IMPROVED GNSS RECEIVER USING A COMBINATION OF VELOCITY INTEGRATION AND PRECISE POINT POSITIONING

Technological advantages

Innovative :

- Use of kinetic data for accuracy enhancement.

Efficient :

- Use dual or more frequencies only for reference states, then switch to single frequency mode for velocity data.
- Power consumption 10x lower than for standard multi frequencies receivers.

Invention synthesis

The invention presents an autonomous improved GNSS receiver (accuracy and smoothness) resilient to multipath issues.

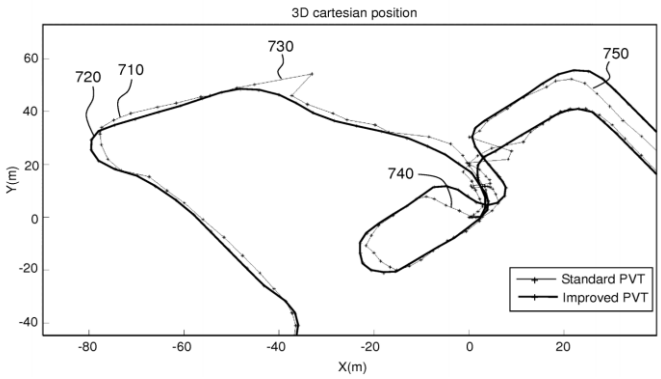
GNSS receivers positioning and accuracy may have degraded performances depending on atmospheric perturbations, satellites variations (orbit, internal clock) and especially when multipath is an issue (such as in urban canyons). Complex solutions (hardware, software) allows improving the positioning.

Solutions using weighted averages from a velocity vector (time integration), and the positioning data, have been presented. Precise point positioning receivers (10 cm precision) with dedicated hardware (using more than one frequency) are costly and power hungry.

The present invention uses an accurate first PVT location (using at least two frequencies) and then uses an integration of velocity data from a PVT vector using a single frequency. A weighted average is then used to compute the new location. This method allows a large reduction in power usage.

Potential applications

- Positioning in complex environments such as dense cities.



Comparison for a 3D trajectory using corrections from the invention and using a regular tracking

Commercial benefits

- Improvement in GNSS receiver accuracy / reliability in complex environments.
- Precise point positioning (10 cm).
- Stand alone.
- Reasonable power consumption.

Patented invention - under license.

For more information :

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