Performance Analysis of a Positioning Algorithm Using Raw Measurements Taken from a GPS Receiver

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Abstract. The scope of this paper is the implementation of a positioning algorithm using the approach of post-processing the measurements taken from a real GPS receiver, in order to assess user's position and performance of the algorithm. Recently, there is an increase interest in positioning techniques based on Global Navigation Satellite Systems so we focus on the performance evaluation of a positioning algorithm. The paper is organized into six major sections. The first section goes over background on positioning techniques based on GNSS. The second section describes the basic navigation solution. The third section is referred to data collection process. The fourth section is dedicated to our approach in implementing the PVT algorithm. Section five presents some results obtained analyzing the algorithm performance. Finally section six draws the conclusions. Using the approach of the weighted matrix, we achieved an improvement on the position estimation mostly in the vertical component.

Keywords: GNSS, receiver, positioning, PVT, raw measurements, algorithm, GDOP.