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The NRTK positioning has got a great development in recent years, thanks to the appearence of some networks of GNSS permanent stations. One of the main goals of these networks is to extend the real-time differential positioning beyond the limit of 10-15 km, allowing a positioning useful for applications such as surveying, monitoring, precise navigation.

This work wants try to focus the attention on the quality control of the real-time GNSS positioning both from what the network provides, and from one of the network products is used by the rover receiver.

The primary purpose is the correct fixing of the ambiguity phase in the double difference approach, considering the rover receiver. The quality of the positioning is a parameter that must be monitored in real-time to avoid that a wrong ambiguity fixing, also called FF (False Fixing), occur; often this is due both to internal problems of the network software and, more often, to the environment (obstructions, multipath ...) where the receiver works.

To achieve this control a tool was designed that, starting from the data available in real time by a user connected to an NRTK positioning service, can identify with a certain probability threshold the effective presence, or the possibility of a false fixing in the position. The input data of this instrument will be some of the real-time data available from the NMEA message, extractable from the rover receiver.

The FF estimator will be composed of a neural network, trained a priori with some datasets, and will have, as a single output, the probability that the current fixing is a false fixing of the ambiguity phase. In this regard, it will be necessary to identify, among all available data in real time, those most sensitive both to the deterioration of the accuracy and the presence of the false fixing. These parameters will be those used to calibrate (“train”) the neural network. Downstream of the estimator, a representative index is provided as an output of the algorithm (similar to a traffic light), of the quality of the fixing, possibly allowing the user to re-initialize the measurement session. The change over time of these probabilities is useful to forecast an incorrect positioning (not always considered as a false fix) before it actually occurs.

Some tests were made and great results were obtained: the developed tool is able to predict approximately the 98% (on a sample of about 90 days of independent data with a rate of acquisition of 1 second) of false fixing considering parameters that are available for the rover receiver. This innovation will probably have a great importance in the future to increase the accuracy of the NRTK positioning.