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A Positioning Mechanism Based on MEMS-INS/GPS and ANFIS Data Fusion for Urban Life Mobility Improvement

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To achieve a positioning mechanism for urban life mobility improvement, a signal processing algorithm was tuned, using an ANFIS (Adaptive-Neuro-Fuzzy-Inference System) data fusion algorithm, with the experimental data collected from platforms equipped with Inertial Measurement Units (IMU) based on MEMS sensors and GPS receivers. In the paper' sections are presented the following aspects of interest: the MEMS-INS/GPS (a GPS unit and a miniaturized Inertial Navigation System) structure and functioning, the fuzzy inference system training procedure, the data evaluation of the proposed structure using experimental data and the testing results. The after-training evaluation of the FISs denoted absolute mean deviations between the reference data and the fuzzy models by order of 10-5 degrees for latitude and longitude channels, of 10-1 m for the altitude channel and 10-1 m/s for all three-speed channels.