Adaptive calibration algorithm of three axial magnetic fluxgate sensor using support vector regression

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Abstract: An adaptive calibration method for three axial magnetic fluxgate sensor using support vector regression (SVR) is proposed in this paper. Firstly, the main problems arise from non-orthogonality, different sensitivity and bias of the three axes are analyzed. Then a relevant mathematic calibration model in matrix form is constructed to rectify these errors, and is converted to linear form one. Next, the coefficients of calibration model are identified by SVR algorithm. Practical measurement data of geomagnetic field are used to test, and the results show that the measurement errors of three axes fluxgate sensor in different attitude can be rectified under 50nT from 800nT.Because there is no need of any other auxiliary equipment, the proposed method seems to be a better candidate for fast or field calibration of three axial magnetic fluxgate sensors. ©2010 IEEE.

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