HIGH PRECISION TARGET LOCALIZATION METHOD BASED ON COMPENSATION OF ATTITUDE ANGLE ERRORS

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Abstract- The attitude angles of UAV, as the input parameters of the target localization process, influence the accuracy of geo-targeting. In order to improve the accuracy of target localization, this paper compensates the attitude angle errors of the UAV based on learning prediction compensation. Firstly, considering the airborne equipment and the metadata provided by the UAV, we combine rear intersection with GPS/INS to calculate the error of each platform and aircraft attitude angle. Then the error prediction model to compensate each platform and aircraft attitude error is derived by analyzing the error distribution and polynomial regression. Afterwards, because of the limit of the UAV aerial image amount and the similar influence of each attitude angle error on targeting and geometric correction, we use equivalent optical axis angle to represent platform and aircraft attitudes. Furthermore, we also predict and compensate the error of the equivalent angle. In this process, we adopt SVM and regression to classify and obtain error prediction model of equivalent optical axis angle. Finally, the actual data is used to verify the compensation algorithm. The results show that the method can improve the accuracy of target localization efficiently, and has a certain value of engineering guidance and practical application.

Index terms*:* UAV; Geo-targeting technology; Attitude Angles; Rear intersection; Regression; Learning.