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基于下视序列图像的无人机测速方法(PDF)

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Title:	Velocity Measurementof Unmanned Aerial Vehicle Based on Sequential Downward Looking Images

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摘要: 为了实时、较高精度的获得无人机的飞行地速,提出了基于下视序列图像的无人机测速方法。利用无人机上的速率陀螺补偿获取图像时载机的角运动,实现了惯性稳定辅助特征点匹配算法,可以快速稳定的得到地面同名点在相邻两帧图像中的像差。利用无线电高度数据可以得到无人机的地速。在虚拟视景平台上进行了仿真实验,并与其他匹配算法进行比较,结果表明该方法计算量少、精度较高。

Abstract: In order to measure the ground speed with real time and high precision, a method of velocity measurement based on the sequential downward-looking images for UAV was proposed. We developed a feature points matching algorithm with the aid of inertial stabilizing. The angular movement during capturing images is compensated by means of the airborne gyroscope. The image aberrations of the two corresponding ground points in adjacent images can be obtained fastly and stably. When the altimeter is available, the ground velocity of the UAV may be provided. The simulation in virtual scene was carried out, and compared with other matching algorithms, the results show that this method is less time-consuming and with higher precision.

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