

ABOUT SOME PROBLEMS OF IMAGING SENSORS IN AERIAL FIELDS

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Rezumat. Autorii abordează în lucrare problematica percepției imaginii vizuale achiziționate la limita vizibilității atmosferice, cu senzori în IR, cu aplicație în specificul de lucru al avioanelor fără pilot. Au fost luate în considerare caracteristicile esențiale care intervin în achiziția de imagine în mișcare și anume: contrastul, strălucirea și rezoluția, modul în care acestea sunt perturbate de sursele de zgomot (fluctuația fonică, absorbția atmosferică, zgomotul de clutter) și conexiunile cu gradul de percepție sau probabilitatea de observare. Au fost evidențiate unele soluții de creștere a probabilității de observare în vederea depășirii pragului limită de observabilitate.

Abstract. The authors tackle in this paper the issues of perception of acquired visual image, at the limit of atmospheric visibility, with IR sensors, with applications in the field of aircrafts without pilot (Unmanned Aerials Vehicles). The paper takes into account the essential characteristics that take part in the acquisition of moving images, namely: the contrast, the brightness, the resolution, the way in which these are perturbed by noise sources (photonic fluctuation, atmospheric absorption and clutter noise) and the connections with the perceptivity factor or observation probabilities. Some solutions have been highlighted, which refer to the increase in the observation probability aiming at overtaking the observability limit threshold.

Keywords: aerial field, thermal sensor, clutter, detection probability

1. Introduction

At the present, the evaluation of orientation probability at mobile robotic systems, especially of those removable in the high (UAV- unmanned aerial vehicles types) is an important concern. The performance is essential when the sensors work in environment conditions very close to their noise level (atmosphere turbulence, fog, dust, gases, etc.). In these conditions, the minimal information waited from sensors refer to the detection probability, some details of the scene (quantified by resolution), at signal to noise level, and the image luminosity. Problems are various, but this paper intends to approach some acquisition image aspects of thermal sensors, on display. In this case, the thermal sensor is in relative movement towards a fixed object on the ground.

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