



Sophia Antipolis, le 1er Septembre 2011

Post-doctotal position: 10 months

INFRADAR: Fusion of INFRARED and RadAR sensors for collision avoidance systems on helicopters

Laboratory: LEAT CNRS UMR 6071 - Université de Nice Sophia Antipolis, France

Beginning: 1st December 2011

End: 30th September 2012

Objectives

ATE, LEAT and Opéra Ergonomie are involved in the INFRADAR project for developing a fusion system between Radar and Infrared images for helicopters. The systems should:

- Help the pilots to improve the in-flight security while developing a collision avoidance system. This system is based on the fusion between a mm-Wave Radar (77 GHz) and an Infrared camera. This association will give an all-weather and night and day vision.
- Improve the overall security especially during the “Search and Rescue” operations.

ATE group is part of the leading companies for on-board integration. ATE's division involved in INFRADAR is the Optronics one that is located in Aix en Provence, France.

What has been done so far:

INFRADAR has started on January 2011. During the first months a very directive antenna has been developed and assembled to the FM-CW mm-Wave Radar. A Matlab interface has been developed that already includes the Radar initialization, the Radar operation and some basic Radar signal processing like averaging, filtering and threshold operation.

First measurements have been conducted on the ground and compared to those made with an infrared camera.

Proposed work:

In a first step the detection of pre-determined targets (power lines and pylons) should be improved. More complex signal processing should be implemented while keeping a realistic processing time since the system needs real time operation. In the same time the scanning strategy will be studied in order to minimize the time for having one radar image.

Depending on the work progression, the targets classification will be studied.

At last but not least: the fusion between the Infrared and the Radar images is performed by ATE. In order to be successful this project needs to be developed a strong collaborative environment.



Required capacities:

The applicant needs to be a specialist in radar signal processing or at least on signal processing with basic knowledge for understanding the whole system.

Some numerous measurements campaigns need to be conducted. The applicant should like experimentation.

Contacts: claire.migliaccio@unice.fr
Arnaud.breard@unice.fr