Seminar Notice

Date: Tuesday 29th September, 2009, 4:00-5:00p.m.  
(tea & coffee from 3:45pm)

Location: G3, Electrical Engineering Building

Speaker: Matt Garratt  
School of Engineering and Information Technology  
UNSW@ADFA

Title: Sensors for Navigation and Flight Control of Unmanned Aerial Vehicles

Abstract:

During this presentation I will provide a general overview of the sensor and systems development work I have been part of at UNSW@ADFA. This research has been divided into two main areas: development of a small rotary wing UAV for operations from small ships; and application of biologically inspired sensing and control for small flying vehicles. With respect to the first objective, we have developed a laser rangefinder system combined with a visual tracking sensor to construct a low-cost guidance system. By combining the optical sensor bearing with the information from the laser system, an accurate estimate of the helicopter position relative to the deck can be found. To test the algorithms, a three degree of freedom moving deck platform with a 3mx3m landing area has been constructed. The second topic to be presented concerns inspiration for sensing and control that derives largely from insects. Work with insect vision has led to systems for controlling hover and forward flight using a tiny camera. In my presentation, I will discuss the algorithms used and present flight test results for hover and terrain following using techniques inspired from the honeybee. The insect vision work will be updated to include some more recent work we have been doing towards autonomous flight through urban environments using vision for the US Army. I will do a show-and-tell with some of the miniature sensors and processing we have developed for the US Army.

For further information, visit the website: http://scrg.ee.unsw.edu.au/
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