Research & Research Training Office

Faculty Seminar

March 11, 2008

Dr Matt Garratt

"Robot helicopters: an update on rotary wing UAV activities at UNSW@ADFA"

Abstract:-
In this talk, I intend to give an overview of what we have been up to with robot helicopters and where we are going next. The work falls into two basic categories: systems for landing a UAV on a ship and insect vision. We have been working on systems for landing a UAV onto the moving deck of a ship since 2003. In that time, 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. The entire visual sensor and processing package weighs less than 200g and the laser rangefinder weighs 1.5kg. To test the algorithms, a three degree of freedom moving deck platform with a 3mx3m landing area has been constructed. The deck is capable of pitch and roll up to 25 degrees and is being used to dynamically test the sensing and guidance system.

Work with insect vision has led to systems for controlling hover and forward flight using a tiny camera. In our presentation, we will discuss the algorithms used and present flight test results for hover and terrain following using techniques inspired from the honeybee.
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