

FULLY AUTOMATIC POSITION AND ATTITUDE MEASUREMENT FROM ONE ON-BOARD MOUNTED CAMERA.

by

Börje Hjorth

Ground and flight test dept.
SAAB Aircraft Division
SAAB-SCANIA

ABSTRACT

The image has a long tradition of the role as "measurement sensor" in flight tests. As the use of cameras increase, the use of fast automatic image analysis will become a necessity.

This paper describes a system, running at SAAB today, that has become an important tool in flight testing since it has turned a very time-consuming activity to quite the opposite.

Through the whole sequence of images from one on-board mounted camera, the system is capable of fully automatic determination of the position and attitude of the aircraft. The method is a composition of advanced image processing and photogrammetric calculations in interaction. Camera calibration methods are also important tools both for reliable automatic tracking and increased accuracy in output data.

Today the main field of applications of this system is in verifying tests of IN's, microwave landing systems, radar altimeters etc. In a modified version, it will also be possible to use the system for stores separation tests.

Furthermore the possibility to replace cine-cameras with video equipment will be discussed. Since a test program of air-borne video equipment so far has given very promising results, there will in the near future be such replacements and the advantages with this type of image processing applications will be even more obvious.