

# **“Applications of 3D sensors (micro-positioning) & degradation issues”**

**MSc Javier Contreras**

CENIMAT, Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa and CEMOP-UNINOVA, Quinta da Torre, 2829-516, Monte de Caparica, Portugal, Phone: +3512948524, Fax: +3512941365; e-mail: ja@uninova.pt

The CCD was invented in 1969 at Bell Labs. Present machine vision inspection systems and 3D sensor systems include mainly charge-coupled devices (CCDs). CCDs and CMOS imagers are both manufactured using silicon. However CMOS sensors are also competing in the market because they allow a low power usage, integration of additional circuitry on-chip, and a lower system cost.

On the other hand a 3D position sensitive detector has been fabricated at UNINOVA, using amorphous silicon. It can be used to represent shapes or profiles of real-life objects. Shape measurement and object profiling inspection is the aim of this sensor that has also been fabricated by only a few other companies, using silicon. So there is an area of the market in which this sensor could be interesting in terms of fast data acquisition and processing as well as lower cost than similar 3D position sensitive detectors made in silicon. However one of the drawbacks of this sensor is degradation which is being studied and tackled.

Alternatively, this sensor has also been used to detect movement and has been applied to micro-positioning platforms.

This talk will start introducing 3D sensor systems. It will then be shown how 3D position sensitive detectors fabricated at UNINOVA have been applied to micro-positioning and movement detection. Degradation issues will also be mentioned.