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Exploration of a New Position Sensing Method for Optical Position Sensing Adaptable to Non-flat Surfaces.

ABSTRACT - Masterthesis

In this thesis a low cost method for sensing position on non flat surfaces using optical sensors is carried out. Main objective is to overcome the difficulty of position sensing over non flat surfaces e.g. spherical joints. Detection of change in orientation of the surface is also a part of the task. A light source is attached to the movable part such that light emitted from it strikes the surface of a good translucent material that scatters light from within. The sensing system is based on photoelectric sensors, which are placed at the suitable positions of the translucent material. The changes in optical power of the scattered light beam are detected by photo detectors and are used to calculate the position of the light spot on the surface precisely. A successful mapping of position creates the possibility to use this method in environments where conventional semiconductors PSDs are considered inappropriate.