

Hardware optimization of a micro-positioning system based on artificial vision

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Abstract

As part of the manufacturing processes, the study of micropositioning systems plays a key role in precision industrial fabrication in sector such as electronics, defence or aerospace. These processes are in constant research and development since their need in the manufacturing industry is increasingly important. As technology progresses, new and more sophisticated micromachining systems are developed. While accuracy is no longer a limiting factor, cost, both maintenance and purchase price, continue to hold back many companies. With this in mind, this work presents an improvement of a precise micrometric positioning system of very low cost. The mechanical modifications has been implemented in a micromachine prototype in which its operation has been improved by means of a structural modification including a third degree of freedom for positioning the laser used as an end-effector. The improvements achieved by this modification include a reduction in the positioning accuracy and in the repeatability.