

# **OLVIS: A MODULAR IMAGE PROCESSING SOFTWARE ARCHITECTURE AND APPLICATIONS FOR MICRO- AND NANOHANDLING**

C. Dahmen, T. Wortmann, S. Fatikow

Division of Microrobotics and Control Engineering, Department of Computing Science, University of Oldenburg,  
Germany

## **ABSTRACT**

Manipulation processes at the micro- and nanoscale are a result of ongoing research activities at the border between microsystem technology and robotics. Visual feedback has turned out to be the most important sensor used in process automation in the micro- and nanoworld. Usage of various types of visual sensors and varying setups prevented utilization of a common software architecture for algorithm development so far. This article presents a flexible software architecture meeting the requirements of changing operating conditions in micro- and nanomanipulation setups. The proposed architecture has been implemented including a number of I/O and processing modules. Flexible usage has been demonstrated in two very different applications: flow classification of *Xenopus Laevis* oocytes and tracking for coarse positioning of nanomanipulation robots. The software architecture is found to be suitable for fast prototyping in future applications.

## **KEY WORDS**

Manufacturing, Object Recognition, Tracking, Software Architecture.