



Common robot platform
with communication and
power modules onboard

The MiCROn Project

Microsystem & Machine Vision Laboratory

19th Jan 2005

Integrated
tools or
cameras



MMVL

<http://www.shu.ac.uk/research/meri/mmvl/>

MRC

http://www.shu.ac.uk/research/meri/modelling_rc.html

MERI

<http://www.shu.ac.uk/research/meri/>

SHU

<http://www.shu.ac.uk/>

Towards a
Nanogripper

SPM methods

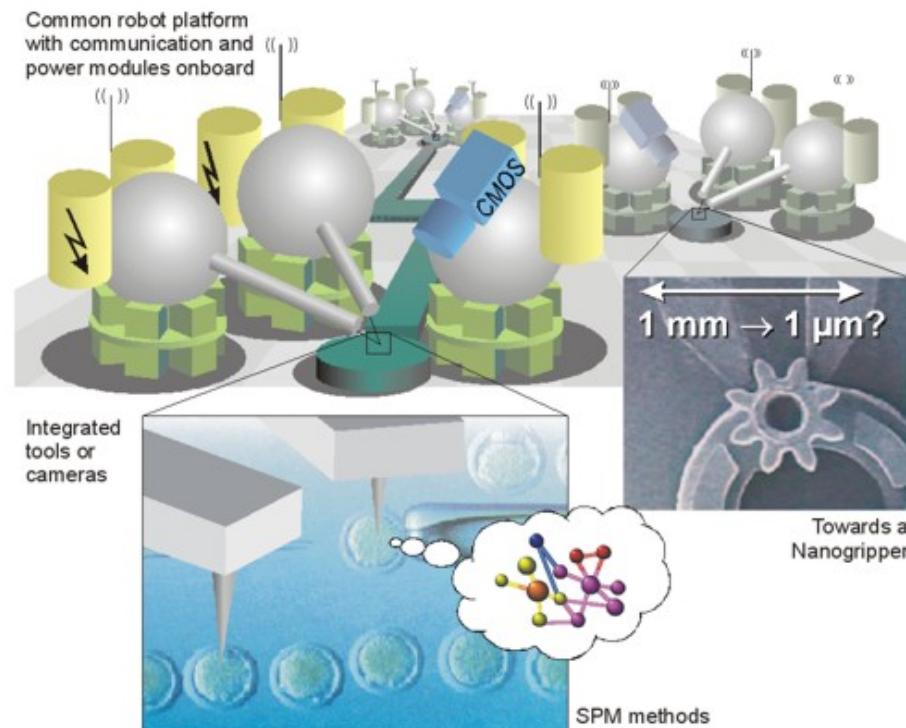




MiCROn

European Union IST project

Uppsala, Lausanne, St. Ingbert, Athens, Pisa, Barcelona, Karlsruhe



<http://wwwipr.ira.uka.de/~micron/>
<http://www.cordis.lu/ist/>

project goals

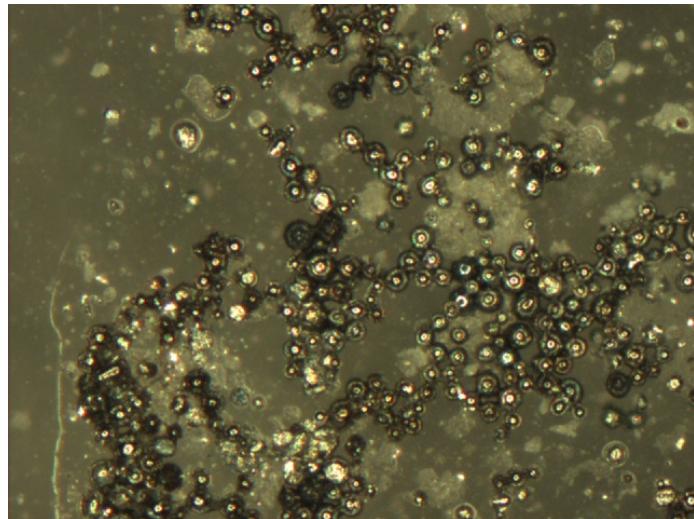
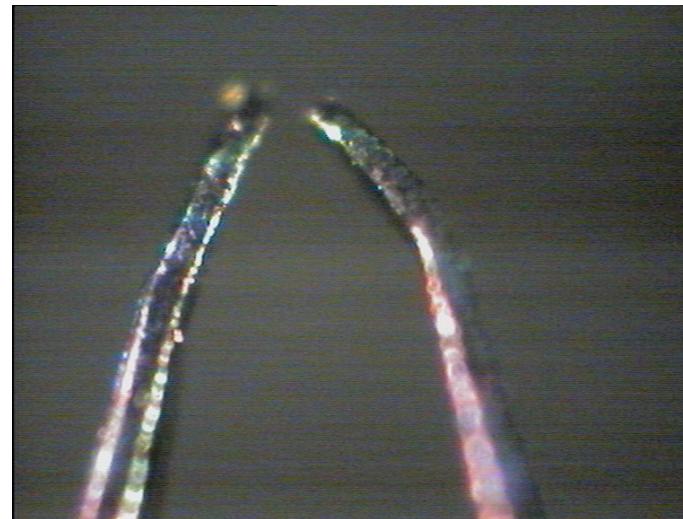
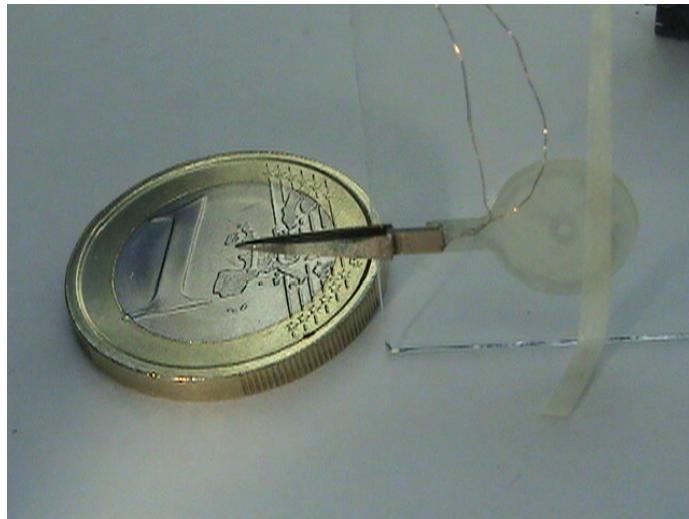
- Manipulate μm -sized objects
- Closed-loop control of robots
- 3D object recognition and tracking

image acquisition

- micro-camera
- microscope



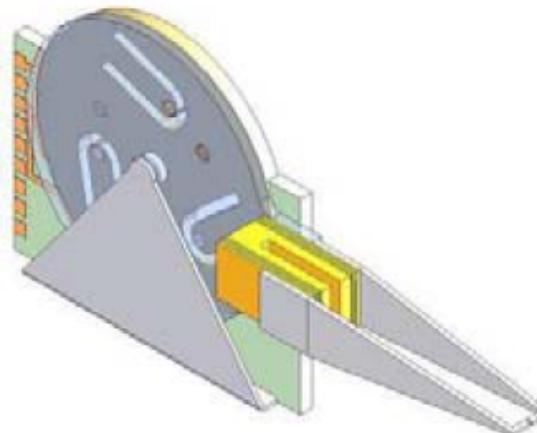
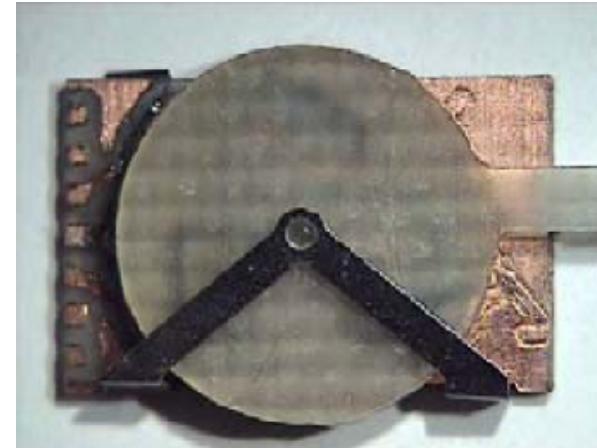
Scuola Superiore Sant'Anna (Italy)



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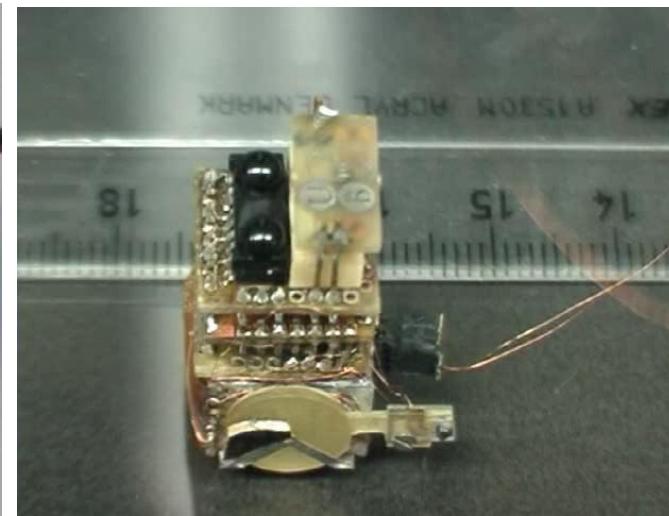
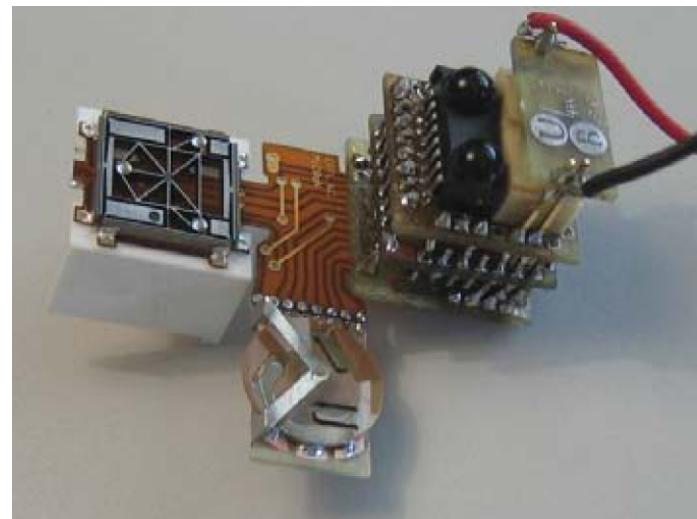
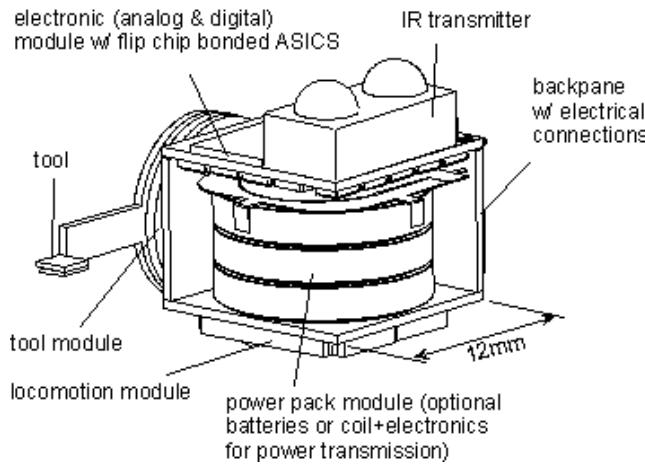


Uppsala University (Sweden)



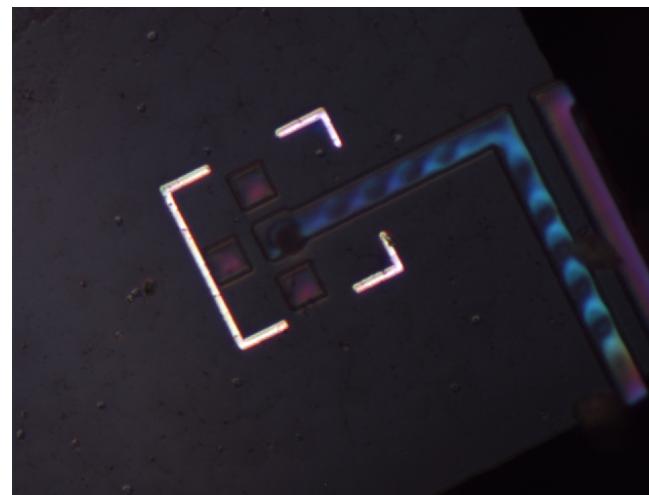
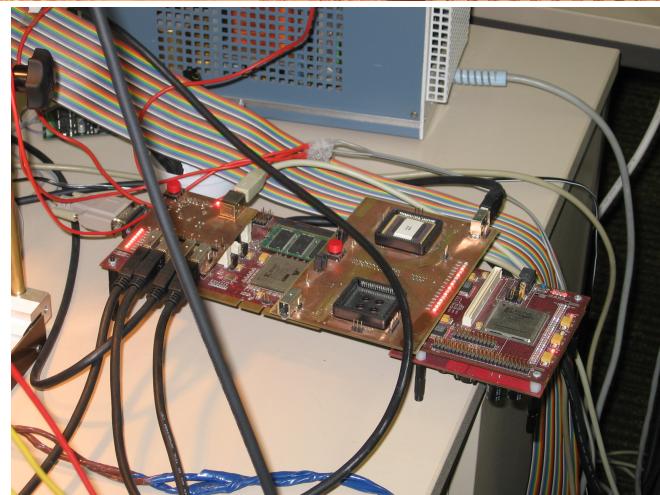
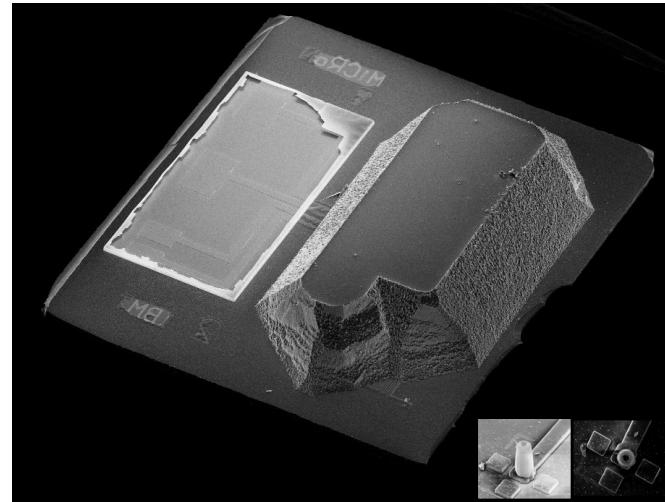
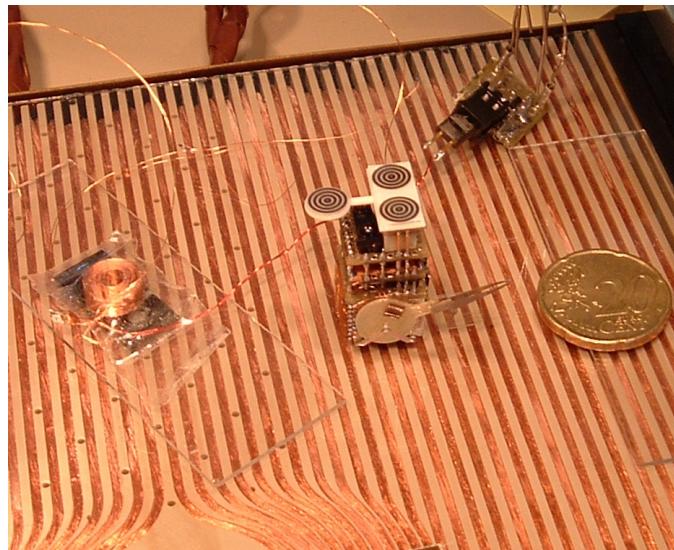


Ecole Polytechnique Fédérale de Lausanne (Swiss)



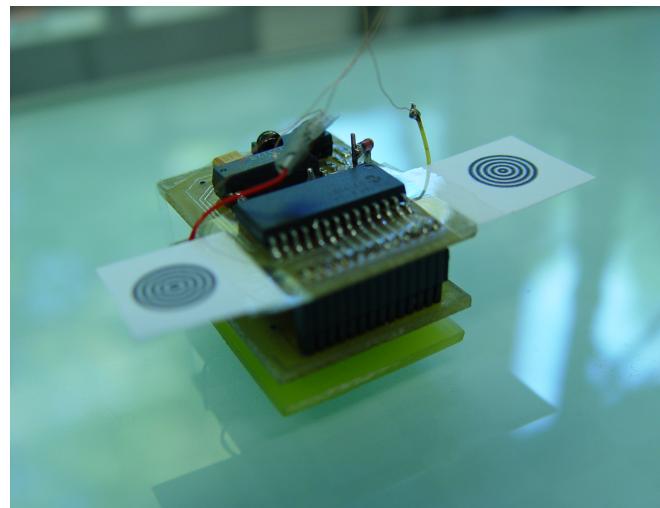
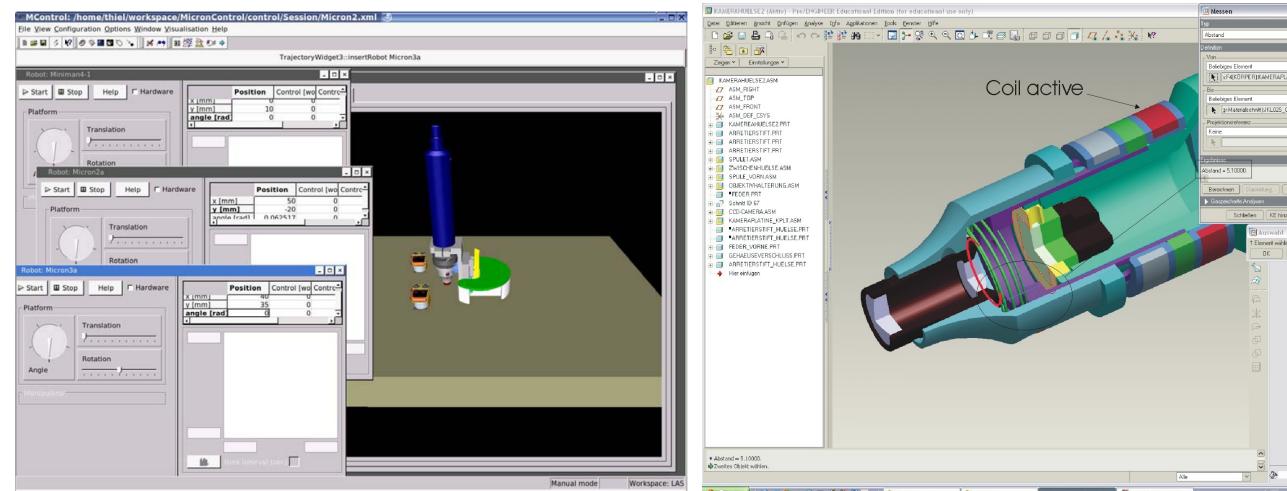


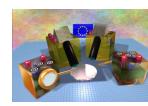
Fraunhofer Institute, St. Ingbert (Germany)



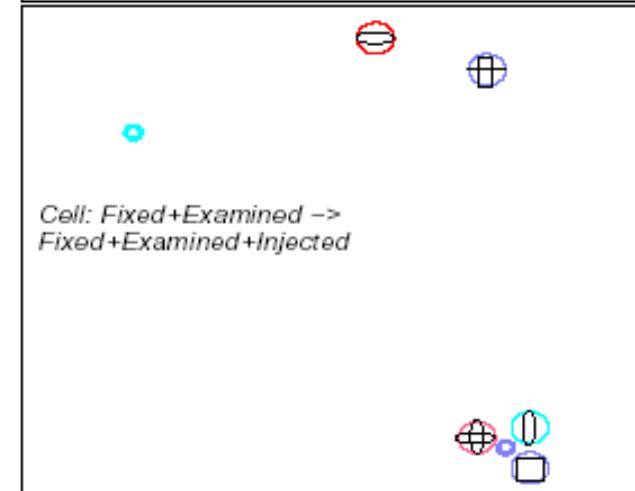
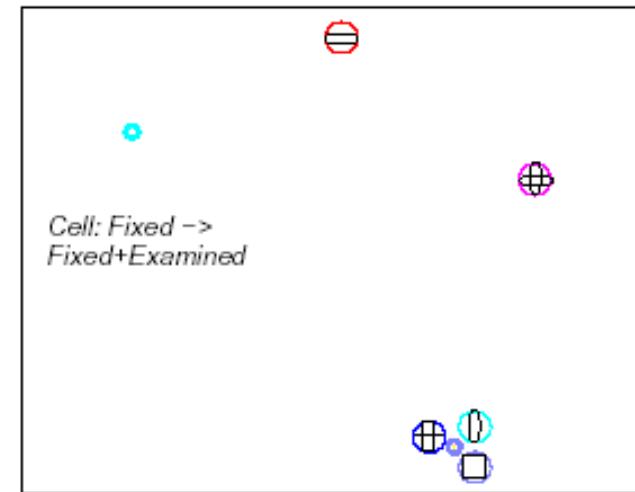
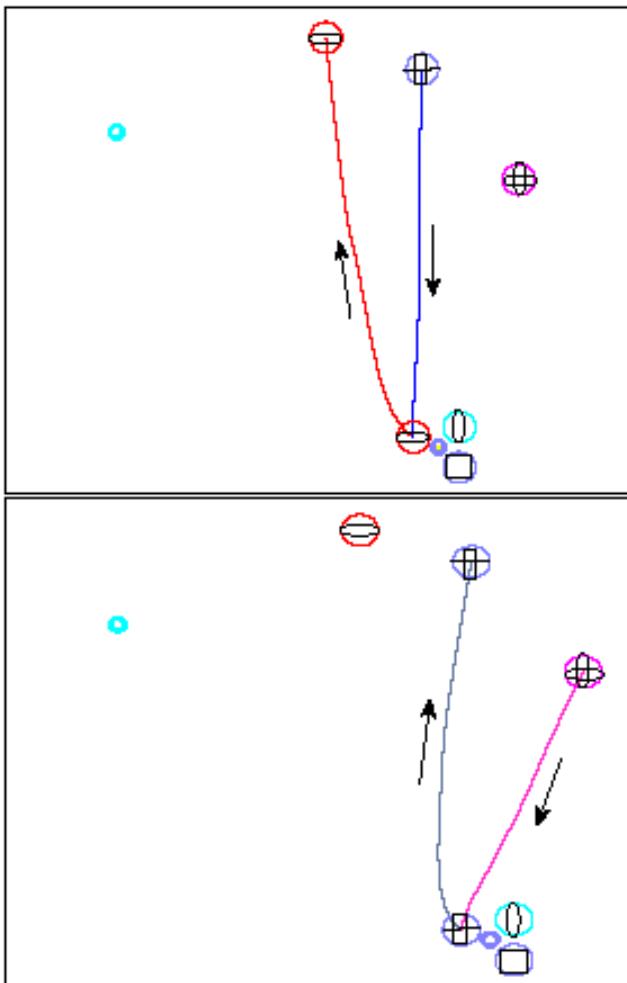
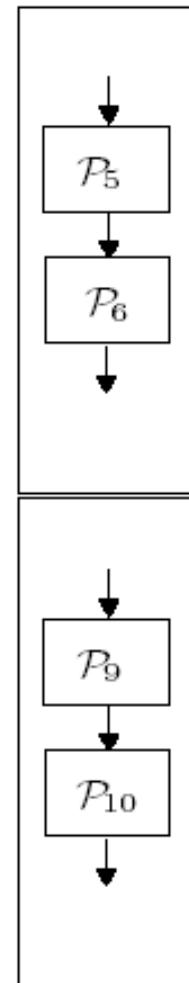


Karlsruhe University (Germany)



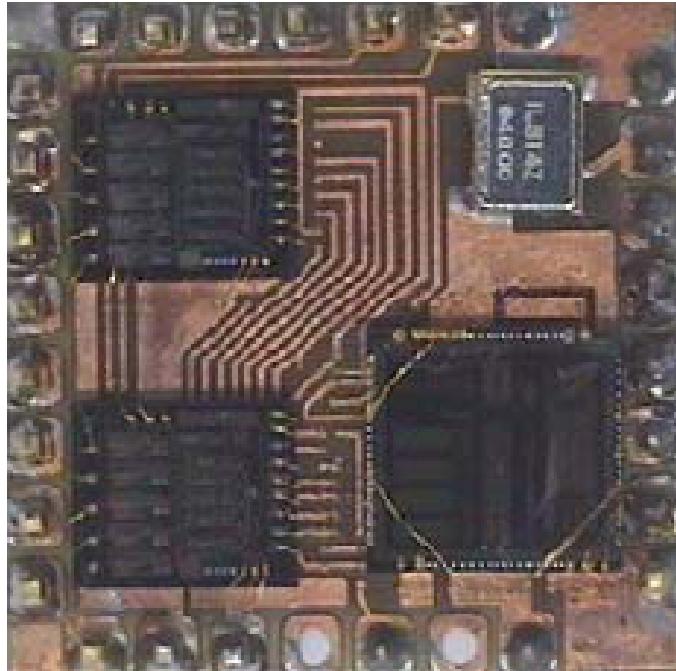


National Technical University of Athens (Greece)



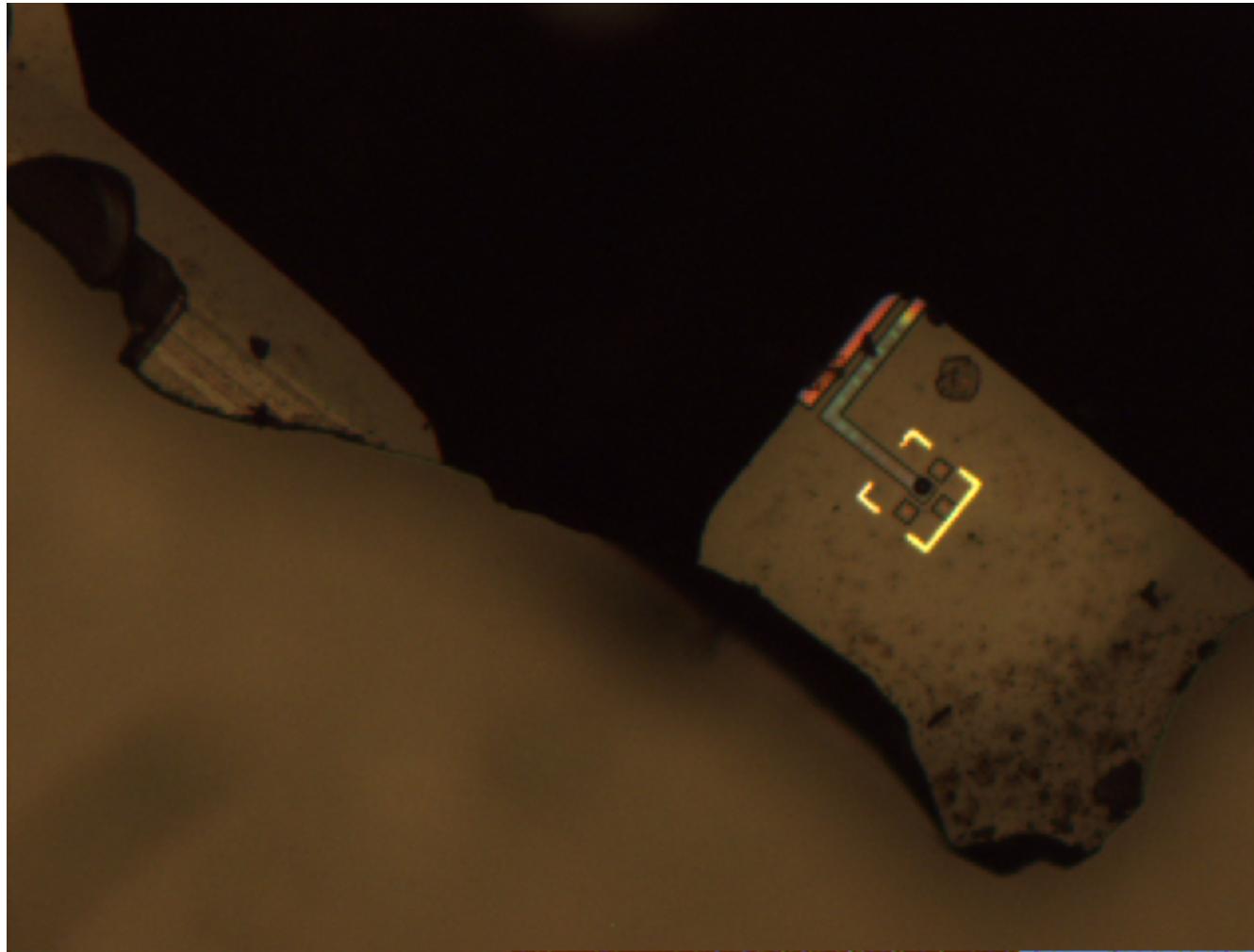


University of Barcelona (Spain)





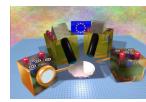
geometric hashing (i)





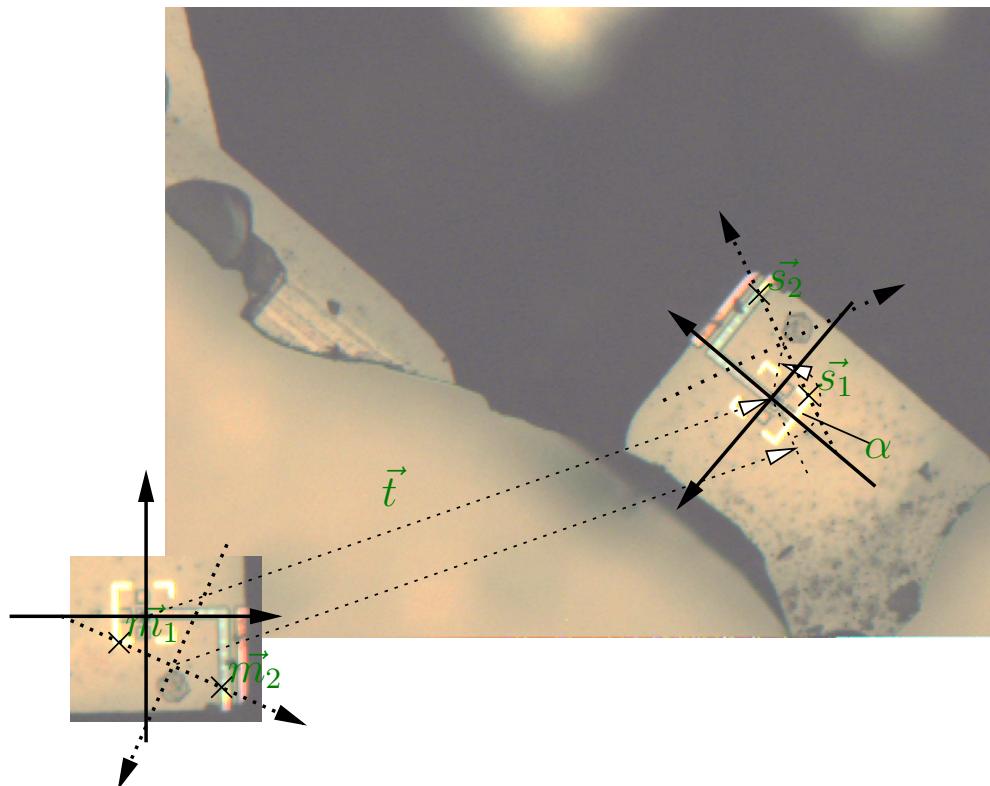
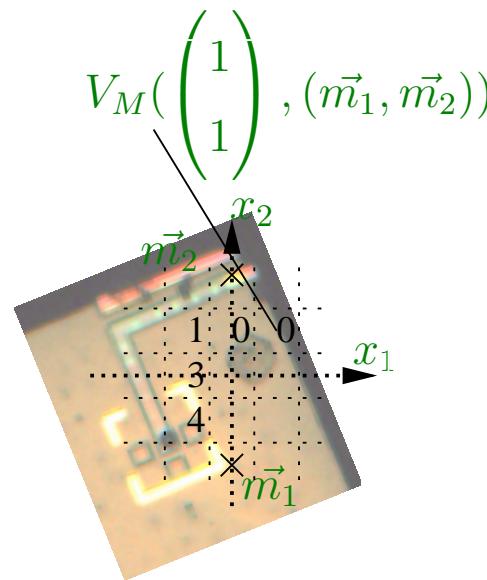
geometric hashing (ii)





geometric hashing (iii)

3-D / 3 DOF

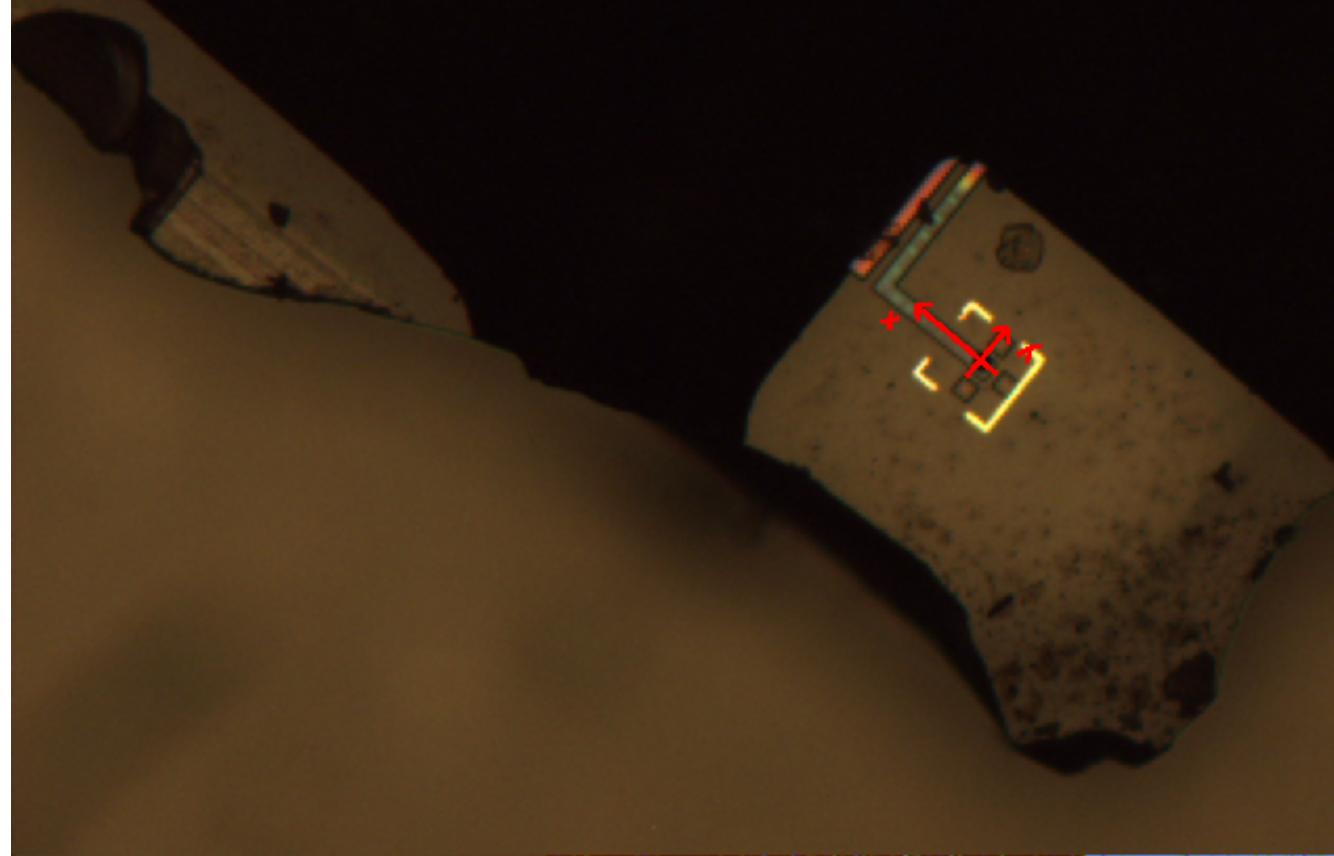




geometric hashing (iv)

Mimas 2005 (C) MMVL, Sheffield Hallam University

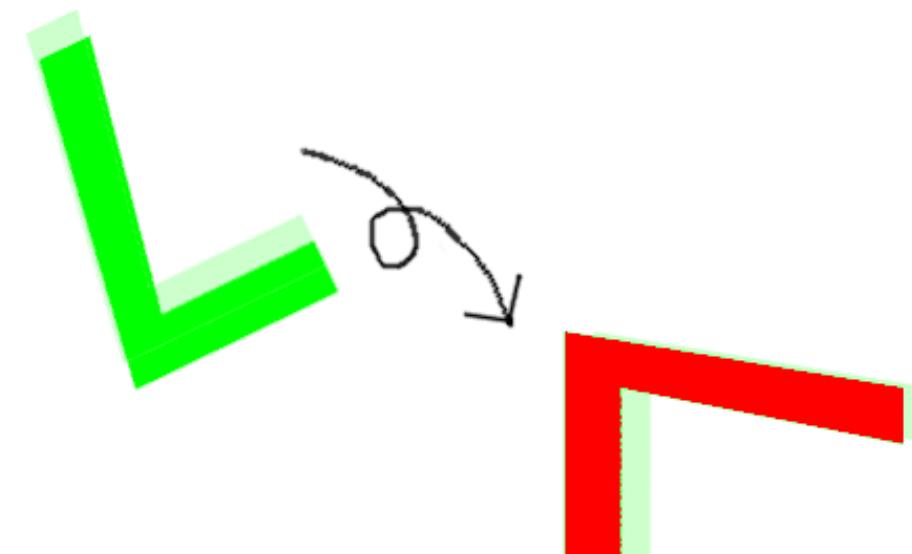
1 object(s), timestamp = 0.08 s. 0th frame
syringe (chip) at (141.72 μ m, 3.46 μ m, 0.00 μ m), angle is -139.6 de





bounded hough transform (i)

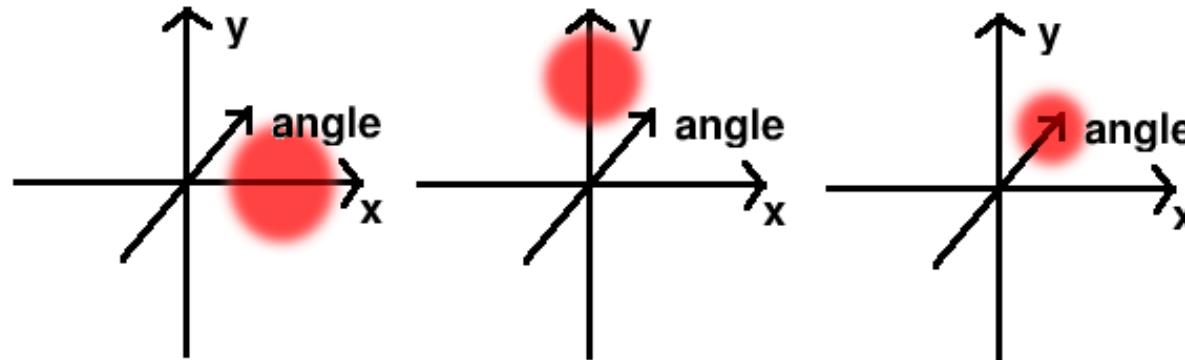
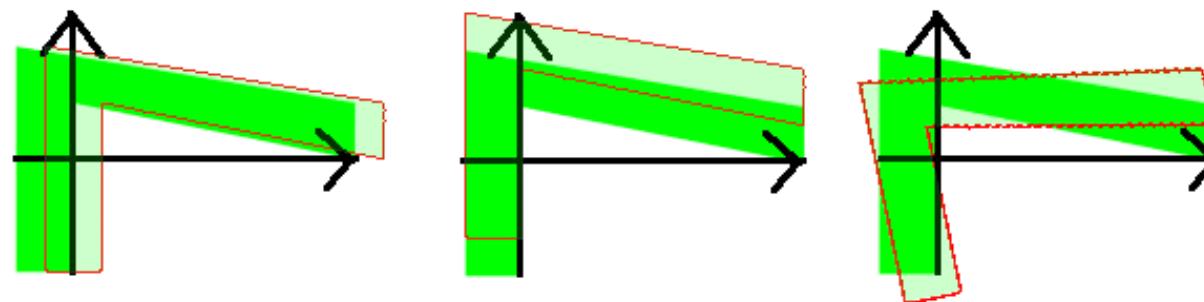
inverse transformation





bounded hough transform (ii)

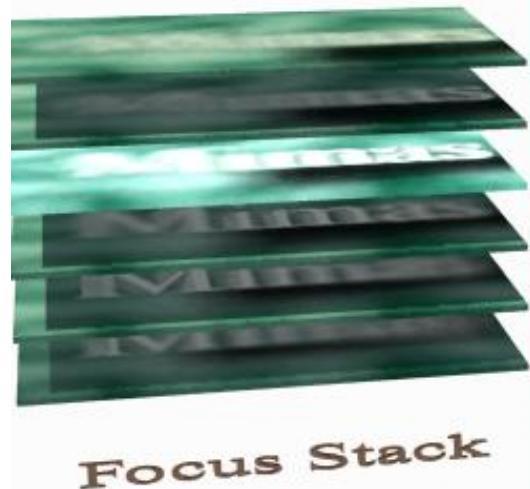
houghspace for relative shifts





depth perception)

focus stacks for 4 DOF





tests

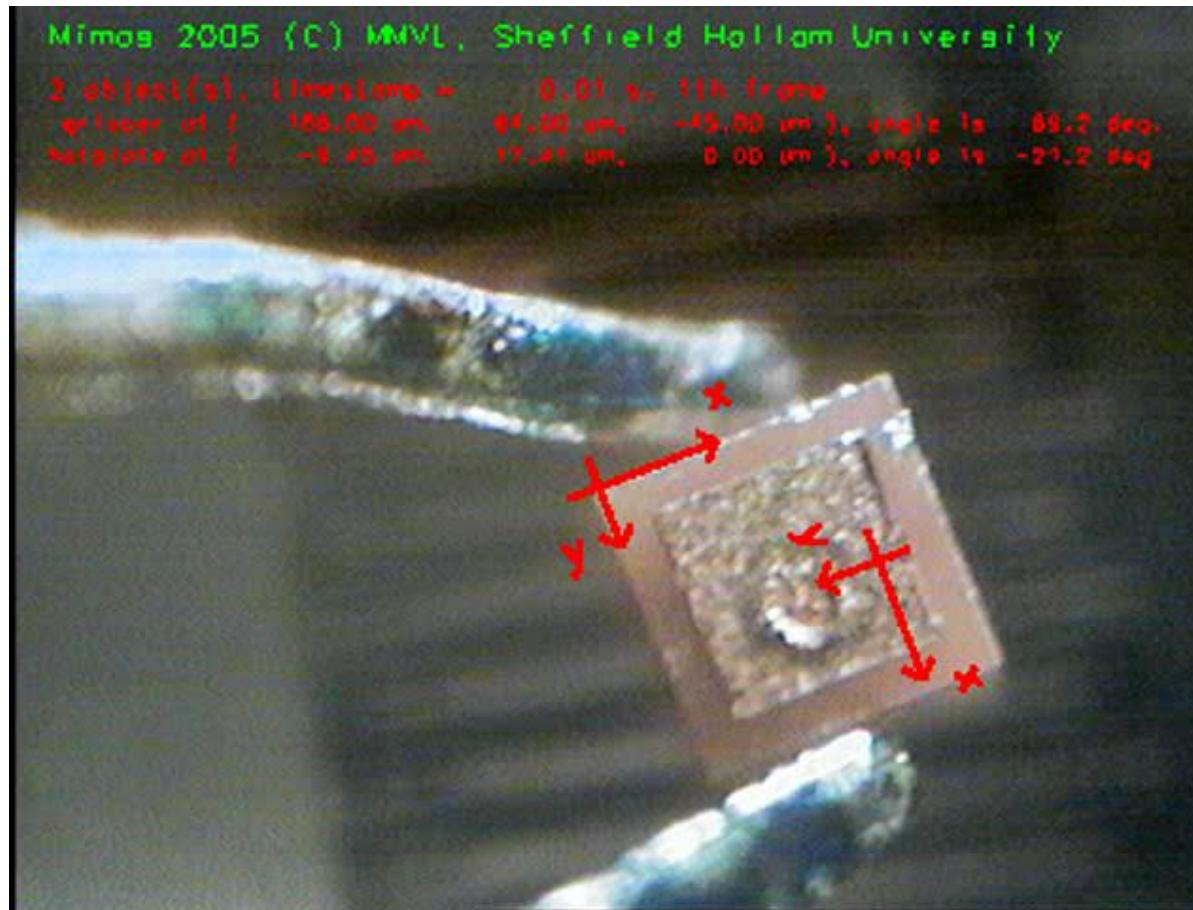
gripper





tests

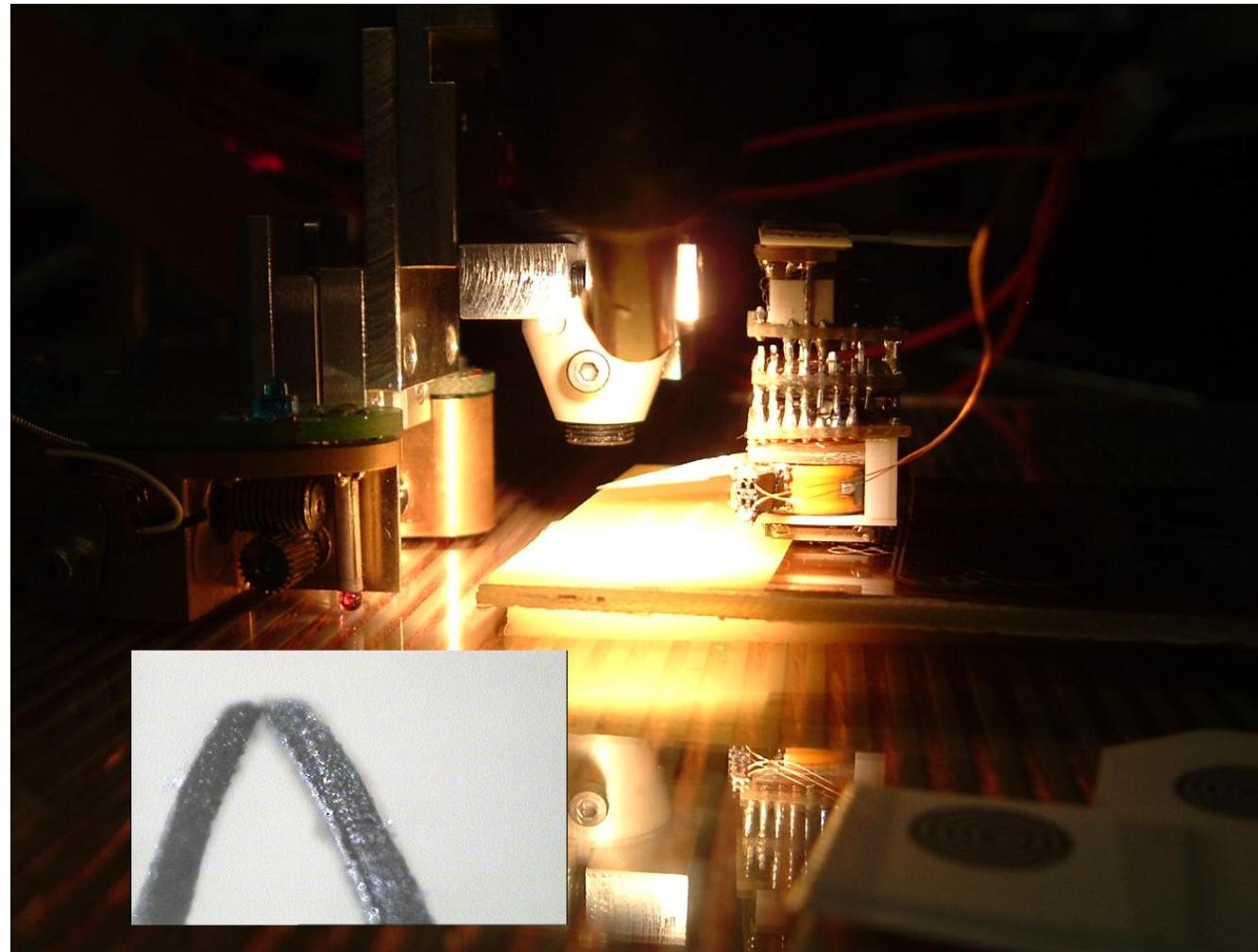
gripper2



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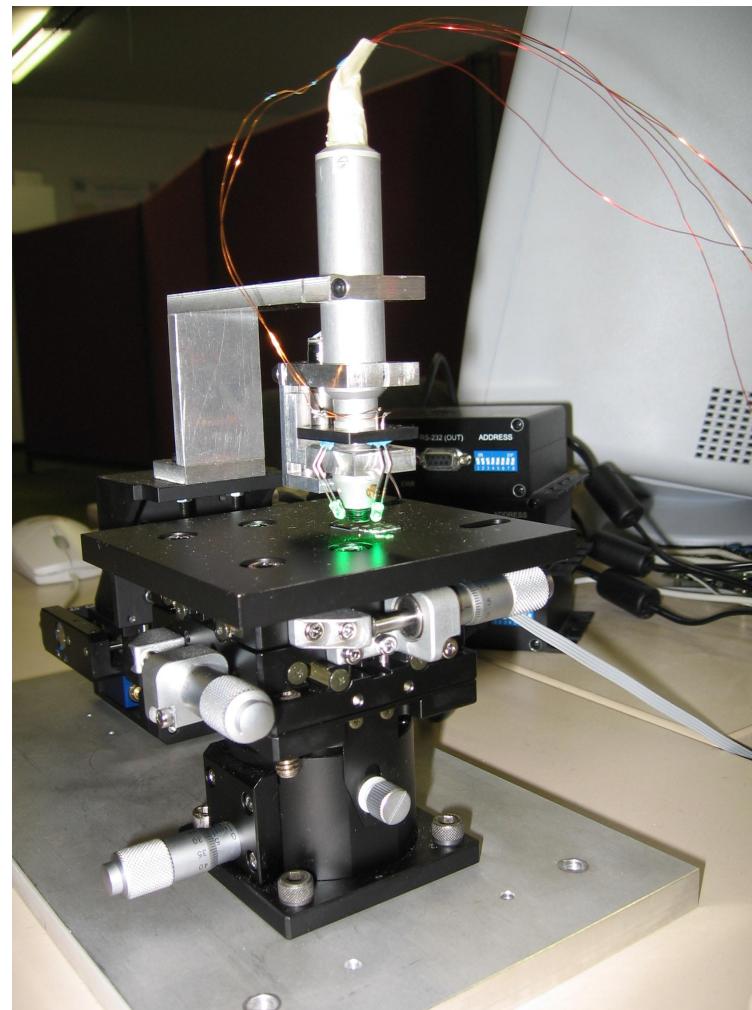
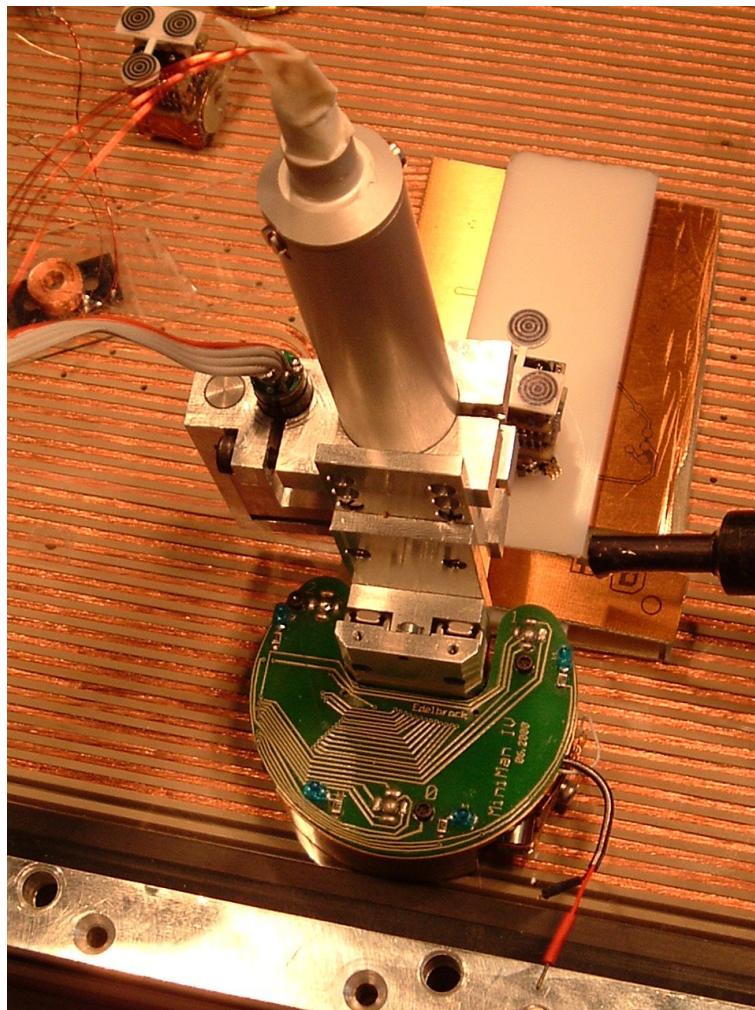


MiCRoN setup





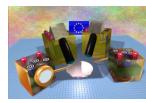
Sheffield Hallam University





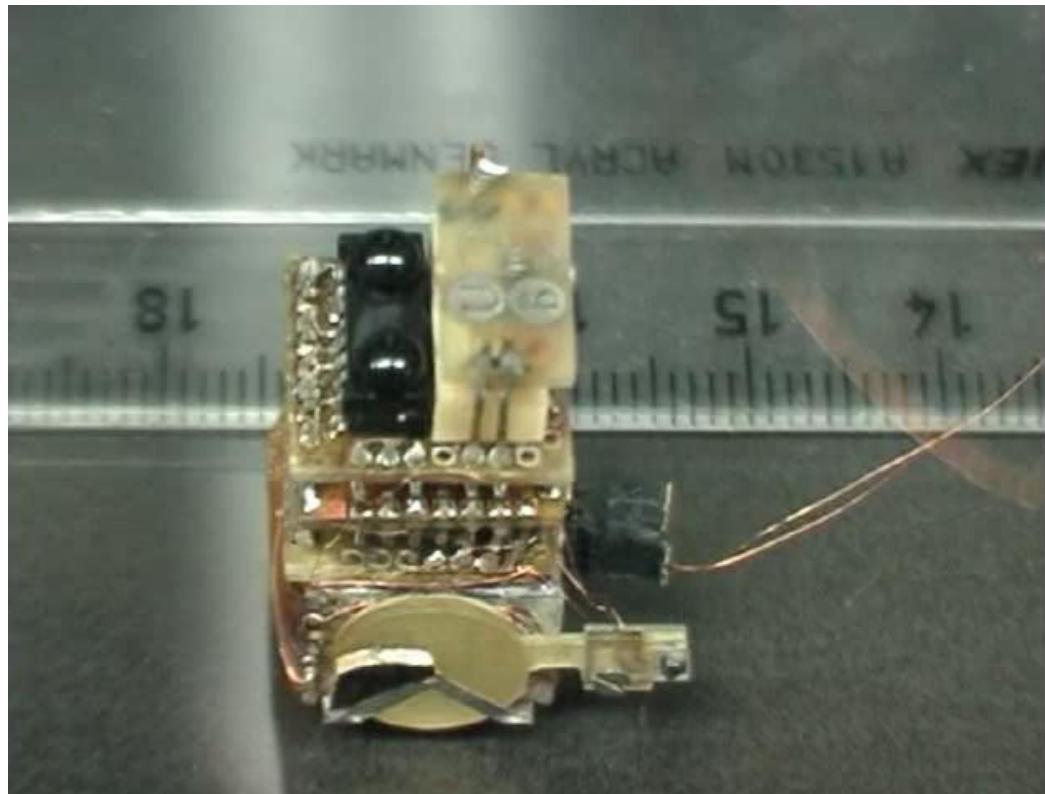
Graphical User Interface





MiCROn

robot



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<http://vision.eng.shu.ac.uk/mediawiki/>