



Master/ Bachelor Thesis

# Heterogeneous MPSoC Architecture for Next Generation Intelligent Microscope

## Motivation

Multi-Processor System-on-Chip (MPSoC) will play a central role in the vision system of next generation intelligent microscopes. This architecture provides a solution to the contrasting requirements of high computation power and versatile functionality on one hand, and stringent constraints of timing, power and space on the other hand.

## Task

With a reconfigurable platform of Altera FPGA, this thesis aims to investigate the applicability and feasibility of MPSoC architecture for microscope-based automated screening applications :

- Functional requirement study of embedded processors for automated cell screening applications
- Mapping the proposed system architecture into Altera FPGA with NIOS II embedded soft-core processor
- Performance evaluation with representative cell detection and tracking algorithms

### Supervisor

Prof. Dr.-Ing. Alois Knoll

### Advisor

Yang Chen, M.Sc

### Research Project

AMIS

<http://www6.in.tum.de/Main/ResearchAmis>

### Area

Embedded Systems, Computer Vision

### Required Skills

VHDL, C Language, Matlab

### Contact

**Yang Chen, M.Sc**

Department of Informatics ·  
Robotics and Embedded  
Systems  
Boltzmannstraße 3 ·  
D-85748 Garching b. München  
Tel: +49.89.289.18144 ·  
yang.chen@in.tum.de ·  
<http://www6.in.tum.de>

