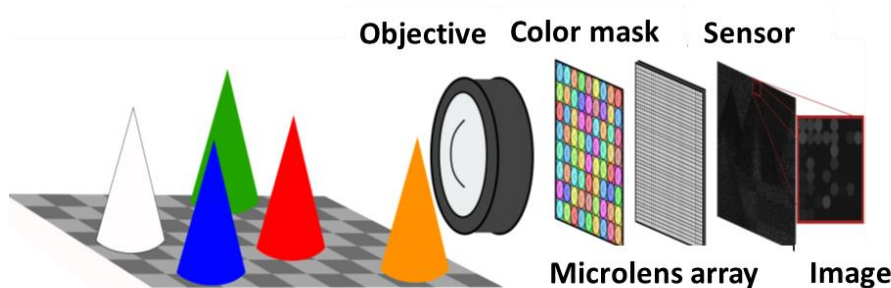


HiWi

Integration of a Fabricated Microlens Array into an Industrial Camera



Motivation

Microlens array (MLA) is an essential component in a light field camera to record spatial information of a 3-dimensional scene. When each microlens is coded by a color filter, the spectrum of the scene can also be recorded. This approach offers various application possibilities for mobile applications, e.g. in the field of medical technology. Imaging and spectral methods are already established in dermatology and oncology. A high-resolution method, which also provides spatially resolved spectral information, opens up new possibilities for the early detection of tumours.

The optical properties of the microlenses are specially adapted to the requirements of the camera used. In addition, each lens is equipped with a digitally printed interference filter. The integration into a camera results in a compact and mobile optical 3D sensor that also provides spatially resolved spectral information.

Tasks

The student assistant will be working on the design of the integration method as well as carrying out experiments inside a cleanroom. The tasks include:

- Get familiar with the industrial camera and its sensor structure
- Design a suitable integration method to fixate the fabricated MLA component into the camera
- Test samples on bare sensors
- Characterize the fixation structure
- Realize accurate control on tilt, rotation and distance between the MLA and sensor
- Final integration of the MLA into the camera

Prerequisites

We are looking for candidates with strong motivation for designing and experimental work. Basic knowledge in optics and mechanics are expected. Experience of working in a cleanroom is favorable but not necessary.

Research areas

Opto(electric) components,
light field camera

Location

LTI (Campus South)

Focus

Design and
related experimental work

Field of study

Mechanical Engineering
Optics & Photonics
Electrical Engineering

Entry date

As soon as possible

Working hours

From 40 h / Month

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