



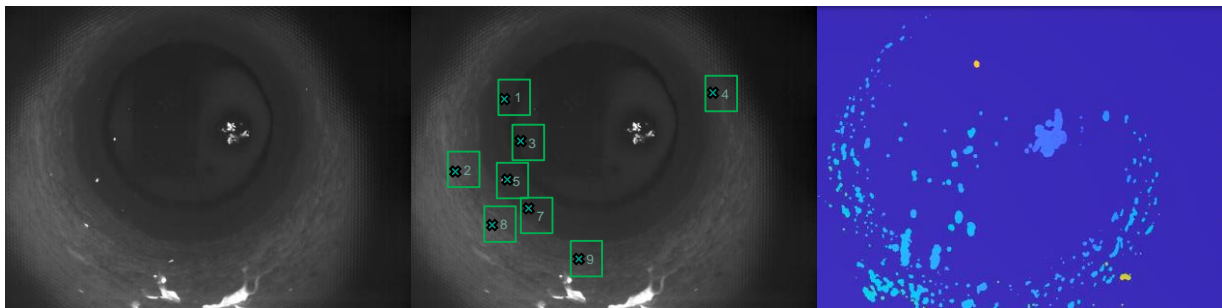
Master's Thesis

3D-detection of particles in a combustion chamber from the images of a plenoptic camera

The invention of plenoptic (light field) cameras allows to measure the 3D information with a single camera. Since this technology has been developed in the recent years, the data processing techniques still remains to be optimized. In our current project, a plenoptic high-speed camera is used to measure 3D particle trajectories in combustion processes for alternative fuels. The goal of the project is the theoretical and experimental analysis of the 3D particle locations and the 3D 3C particle velocimetry with the help of the image from the plenoptic camera.

The goal of the master's thesis is the development and validation of new 3D-particle-detection algorithms based on existing image recordings from a research combustion chamber.

The thesis can be written in both English and German.



Tasks:

- Literature review focusing on existing algorithms for the detection of particles in different conditions
- Planning and implementation of detection algorithms and comparing the results
- Analysing the outcomes of the compares and conclude an optimal detection method for the experiments in combustion chamber
- Documentation of all results

Requirements:

- We are looking for a highly self-motivated student in the field of mechanical engineering or related. Knowledge and experiences in MATLAB is a requirement.