Universität Bremen

BIMAQ
Bremer Institut für Messtechnik,
Automatisierung und Qualitätswissenschaft

Development of an Algorithm for Correcting Image Shifts in Optical Flow Measurements in Grinding Processes

Figure 1: Measurement at the Grinding Wheel

Figure 2: Image Stabilization

Source: https://www.sony.de/alphauniverse/stories/life-in-the-fast-lane

Algorithm better than a steady hand?

This question arises when high-resolution cameras and laser light are used to visualize how cooling lubricants (KSS) move inside a grinding machine. Every detail counts, but even the slightest vibrations can disrupt image analysis and distort measurement results.

As part of a DFG research project at BIMAQ, a smart algorithm is to be developed that detects and corrects global image shifts. This will enable significantly more precise capture of the flow in the particularly critical contact zone between the grinding wheel and the workpiece – an important step toward advancing modern manufacturing metrology.

Possible Contents

- Literature review on image stabilization methods
- Development of an image correction algorithm for vibration-induced shifts
- Experimental validation of the algorithm
- Advanced image analysis to separate grinding wheel and fluid motion

Your Profile

- Interest in image processing and optical measurement
- Programming skills in Python, MATLAB, or similar
- Independent and structured working style
- Enjoyment of working with data and experiments

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