Laboratory of Robot Vision

Principal goals and activities

- Research of methodology and development of algorithms, software and hardware for quality evaluation of the manufacturing process.
- Robot vision systems and their application.
- Image analysis using statistics methods and fractal geometry.
- Description and assessment of defects, quality of surface and monitoring of manufacturing process quality for control of technology processes.
- Development and optimization of transparent material acquisition.
- Providing of expert education in the accredited courses, lifelong education and special training for companies and institutions.

General focus of laboratory

The laboratory focuses on visualization and image processing with fractal geometry tools combined with statistics and other tools. Other priorities are description and assessment of defects, quality of surface and monitoring of manufacturing process quality.

- Design of industrial applications for 2D and 3D vision of industry scenery, proposition of optimum parameters.
- Development of software image analysis.
- Acquisition and processing of images from industrial cameras, including thermal imaging.

Specific instruments and outcomes

- A range of industry cameras (monochromatic, colour, various degrees of frame rate and resolution) and lenses.
- Illumination system for object acquisition with various surface types and under various conditions (including lasers).
- Control units and hardware background.
- Monochromatic 3D camera.
- Linkage between camera and robot.
- Black box for experiments avoiding the environmental effects.
- Advanced image analysis software tools, including application of fractal geometry.
- Lasers, motion detectors, zoom lens, lighting sets, etc.

Offer of technology and expertise

- Processing of data from automatic manufacturing, design of software tools for off- and on-line data evaluation.
- Development of software and hardware equipment for image analysis.
- Image acquisition and processing.
- Training in the field of robot vision and image processing.