Know How and Techniques
in the Fields of Camera Technology

- **Application know-how of various CMOS-, CCD- and InGaAs-sensors**
  Sony, Aptina, Kodak, DALSA Cypress, FillFactory, ...
- **Interfaces**
  PCIe, GigE, DVI, USB2.0, LVDS, SDI, HD-SDI, RGB, S-video, FBAS, I²C, SPI, RS232, RS485, CAN..
- **FPGA/DSP-platform with IP-core library and PCI-express (PCIe)-Interface**
  simple combined with INTEL-ATOM-Processorsystems for example a smartcamera
- **Algorithms for image processing and image preprocessing** for DSP or FPGA
  - for color image preprocessing
  - for correlation based image processing
  - for compression of image data
  - for stereo image processing
  - for operating a matrix camera as a line camera
  - for multi-eyed camera systems with up to 5 image sensors
  - for use of a FPGA for real-time image improvement
- **Real-time image correction of geometric lens distortion for megapixel CMOS cameras** with 30 fps; i.e. >50 megapixel/s, arbitrary undistortion function, e.g. usable for image rotation
- **Real-time lossless video data compression** of high resolution images
- **Solutions with optical character recognition (OCR)**
  incl. text recognition + barcode and 2D matrix code analysis
- **Simultaneous operation of up to 12 cameras**
  at one PC over USB triggered by hardware or software
- **Experiences in UV-sensitive cameras**,
  in CCD and CMOS sensors with UV coating, and in directly UV-sensitive image sensors
- **HDR and WDR applications** (high dynamic range or wide dynamic range)
  camera applications with high dynamics in the image signal, e.g. for monitoring of welding processes (WIG welding, laser welding, plasma welding – exposure dynamics until 1:70.000)
- **Cameras with separated optic sensor head**
  with bi-directional digital (GBit/s) interface for distances up to 50 m
- **Camera Control Unit (CCU)**
  for miniaturized CCD camera heads (up to 5 m cable length)
- **Cameras with integrated on-screen menu (OSD)**
  or displaying of measurement values for industrial process monitor cameras
- **Camera fabrication with high requirement to cleanliness**,
  to cover demands of fabrication of optical devices (e.g. microscopes)
- **Realization of miniaturized camera heads by bare die technology**
- **Overcoming of the 5 m USB limit** using optical fiber adapters. Thus it is possible to connect ABS USB cameras safely over distances up to 500 m.

- **Software interfaces**

- SDK with various software interfaces:
  - API-DLL
  - DirectShow-Filter
  - TWAIN-Interface
  - Java-API (JNI DLL)
  - Windows VISTA / WIN7 compatible software and drivers for 32 / 64 bit

- Support of following programming languages/ SDKs:
  - Visual C++ / C++.NET
  - Borland Delphi
  - Visual Basic 6
  - LabVIEW
  - optional : C# and Visual Basic.NET

- compatible to image processing programs and software packages, e.g.:
  - MontiVision
  - LabVIEW
  - ImageJ / MicroManager
  - HALCON
  - VICOSYS

Further systems can be supported on request. In preparation are:
- LabVIEW Vision Builder for Automated Inspection (Vision Builder AI 2.6) Plug-in
- Neurocheck

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