itom
an Open Source Measurement and Evaluation Software

M. Gronle, C. Kohler, M. Wilke, W. Lyda, H. Bieger, W. Osten
Institut für Technische Optik – Universität Stuttgart

FRINGE 2013

Software Design

Requirements

Hardware Control
- Wide-ranging support
- Easily extendable
- Real-time capability

Powerful Data Processing
- High performance system and algorithms
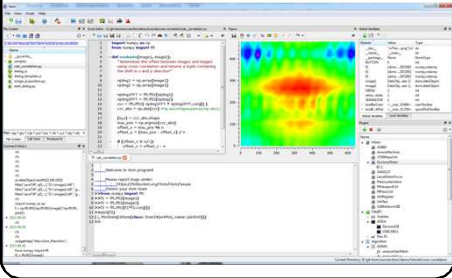- Use well-known and tested 3rd party numerical libraries

Rapid Prototyping
- Fully-functional GUI
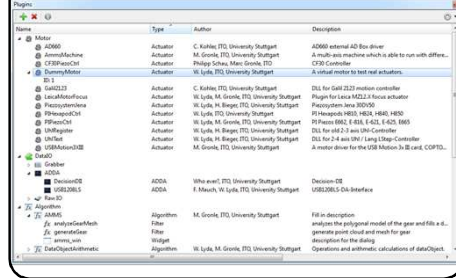- Flexible GUI design
- Support of runtime scripting

Solutions

Core-Application
- C++, Qt-framework, platform independent
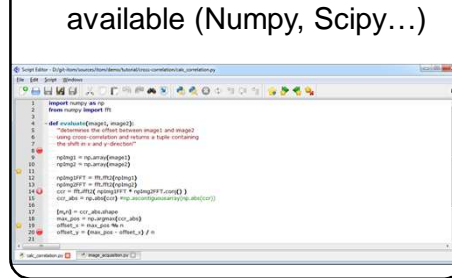- Multi-Threading
- OpenCV based data structures

Plugin System
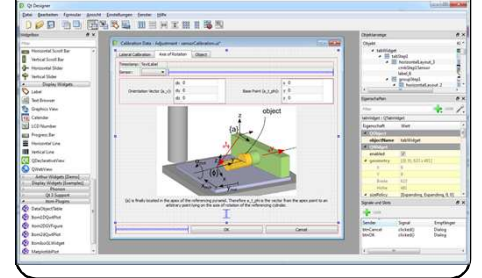- Hardware-Plugins (cameras, actuators, I/O)
- Fast, complex algorithms

Python Scripting
- Embedded Python 3 scripting language
- Development support (Debugging)
- Many 3rd party packages available (Numpy, Scipy…)

Qt-based GUI Design
- WYSIWYG design tool
- Connectivity to Python scripts

Exemplary Application: Fringe Projection Microscope

Hardware Plugins

- Camera control
- OpenGL based pattern projection using an LCOS
- Actuator control

GUIs

- Configuration dialogs
- Adapted live image window for easy sensor adjustment
- 2D and 3D plots for result visualization

Software Plugins

- Fast phase reconstruction and unwrapping in C++

Python Scripting

- High level measurement process
- Calibration
- Data storage and visualization

itom

Licensing, Binaries and Sources

Licensing

- **itom** (core application) is open source (**LGPL**).
- **itom SDK** contains common resources of core application and plugins. Its license is **LPGL + itom-Exception**. This exception allows the usage and linkage of the **itom SDK** in any plugin independent on its proper license.
- **Plugins** can be subject to any (including proprietary) license.

More information about itom

- www.uni-stuttgart.de/ito/itom
- itom.bitbucket.org

Windows 32/64bit setups and sources

- https://bitbucket.org/itom