

itom

an Open Source Measurement and Evaluation Software



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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

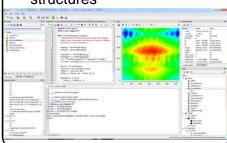
Rapid Prototyping

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

Solutions

Core-Application

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



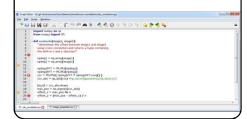
Plugin System

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

Plugins				4
+ × 0				9
Name	Type	Author	Description	
■ @ Motor				
@ A0660	Actuator	C. Kohler ITO, University Stuttgart	AD660 external AD Box driver	
@ AmmsMachine	Actuator -	M. Gronle, ITO, University Stuttgart	A multi-axis machine which is able to run with differe	
A CESTPiezoChri	Actuator	Philipp Schau, Marc Gronle, ITO	CF30 Controller	
DummyMotor	Actuator	W. Lyde, ITO, University Stuttgert	A virtual motor to test real actuators.	
10:1				
@ Gali(2123	Actuator	C. Kohler, ITO, University Stuttgart	DLL for Galil 2123 motion controller	
& LeicaMotorFocus	Actuator	W. Lyda, M. Gronle, ITQ. University Stuttgert.	Plugin for Leica MZ12.X focus actuator	7
@ Piezosystemiena	Actuator	W. Lyde, H. Bieger, ITO, University Stattgart	Piecosystem Jena 3001/50	
@ F9HexapodCtrl	Actuator	W. Lyde, ITO, University Stuttgert	PI Hexapods H810, H634, H840, H850	
@ PSPiezoChi	Actuator	W. Lyda, M. Gronle, ITO, University Stuttgart	P1 Piezos 6662, E-816, E-621, E-625, E665	
@ UhiRegister	Actuator	W. Lyda, H. Bieger, ITO, University Stuttgart	DLL for old 2-3 axis UNI-Controller	
@ UhiTest	Actuator	W. Lyde, H. Bieger, ITO, University Stuttgart	DLL for 2-4 axis UNI / Lang LStep-Controller	
@ USBMotionDXII	Actuator	M. Gronle, ITO, University Stuttgart	A meter driver for the USB Motion 3x III card, COPTO	
a @ Data00				
5 III Grabber				
ADDA				
■ DecisionDQ	ADDA	Who even?, ITO, University Stuttgert	Decision-DB	
■ US81208LS	ADDA	F. Meuch, W. Lyda, ITO, University Stuttgert.	USB120BLS-DA-Interface	
9 AF Rave SO				
# Tx Algorithm				
→ JE AMMS	Algorithm	M. Gronle, ITO, University Stuttgart	Fill in description	
fix analyzeGearMesh	Filter		analyzes the polygonal model of the gear and fills a d	
fix generateGear	Filter		generate point cloud and mesh for gear	
arrans_win	Widget		description for the dialog	
> Te DateObjectArithmetic	Algorithm.	W. Lyda, M. Gronle, ITO, University Stuttgart.	Operations and arithmetic calculations of dataObject.	į,

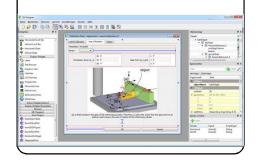
Python Scripting

- 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





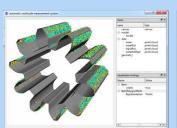
Hardware Plugins

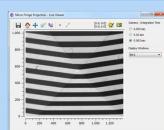
- Camera control
- OpenGL based pattern projection using an LCOS
- Actuator control

Software Plugins

 Fast phase reconstruction and unwrapping in C++







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



Python Scripting

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



Licensing, Binaries and Sources

Licensing

itom (core application) is open source (LGPL).

Pixel = static_cast<flo

- 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

itom