



About us

The Fraunhofer Institute for Industrial Mathematics ITWM supports companies in the development and optimization of products, services, communication processes and work flows.

Based on innovative mathematical models and algorithms, the department Image Processing offers customized all-in-one solutions, suitable for the needs of on-line production and laboratory.

Our products are dedicated to the detection of defects in materials surfaces and a deeper understanding of the underlying structures inside of materials. We are also working on the field of material characterization as is expanded in our flyer **MAVI** – Modular Algorithms for Volume Images.

Technical Details

ToolIP currently is available for Windows 7. If you want to run ToolIP on other operating systems (e. g. linux), do not hesitate to contact us. In any cases we recommend at least 4GB RAM and up-to-date graphics.

We offer single user floating licenses and contracts for updates and service. We also give on-site trainings and consulting.

You can download a free demo version of ToolIP on
www.itwm.fraunhofer.de/toolip

Fraunhofer-Institut für Techno- und Wirtschaftsmathematik ITWM

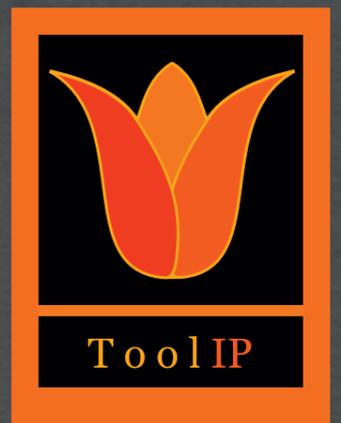
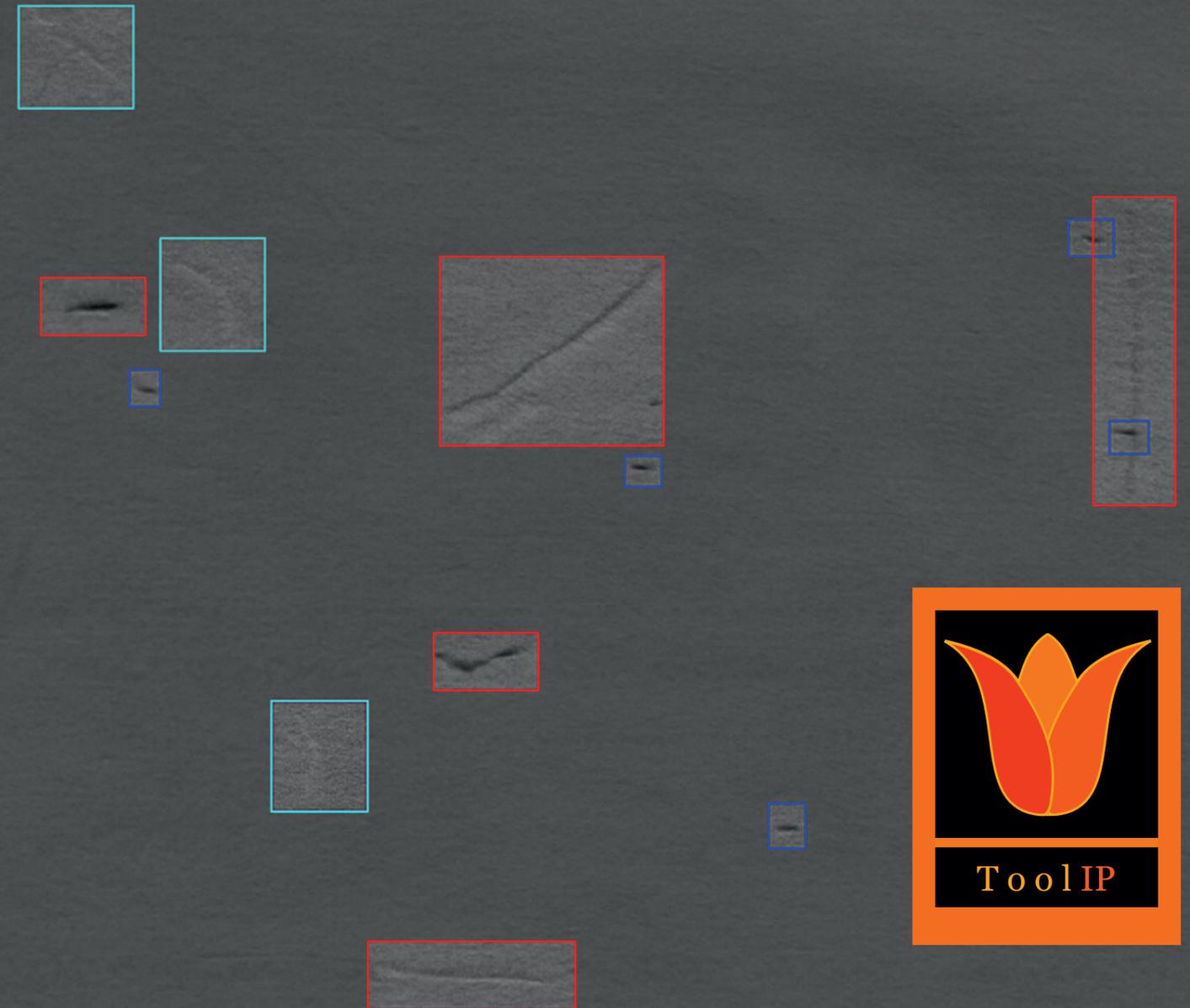
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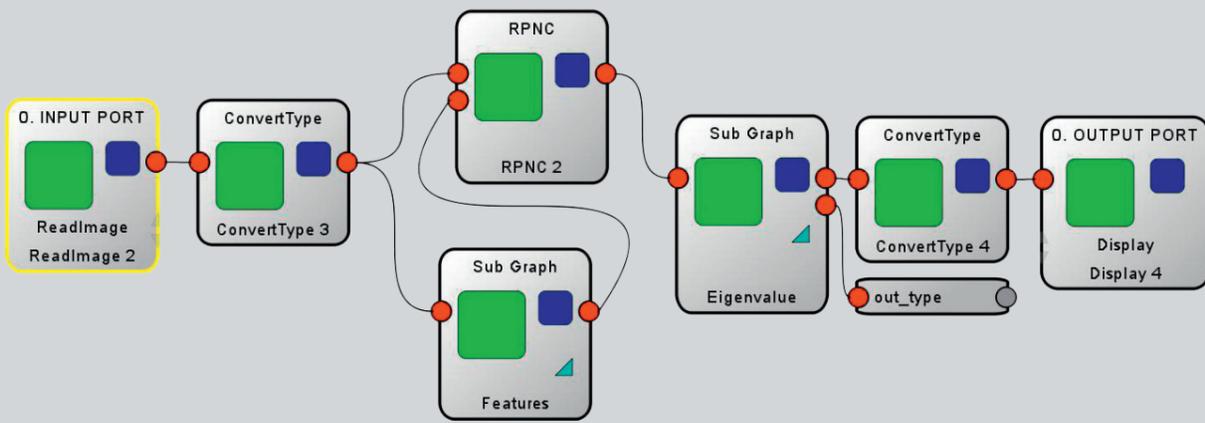
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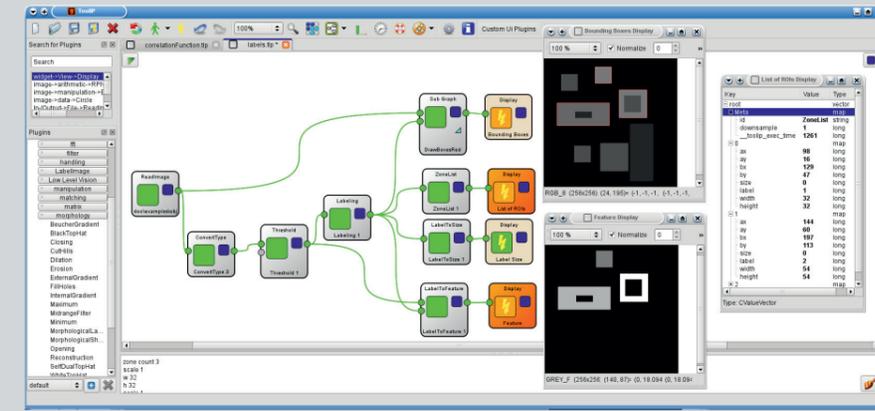
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ToolIP – TOOL FOR IMAGE PROCESSING





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1 Graph example

ToolIP – Tool for Image Processing

ToolIP visually supports the user in creating complex image processing solutions. A modular and powerful image processing C++-library is included. It provides the user with various classes of image processing and analysis algorithms.

The main idea of **ToolIP** is the representation of an algorithm chain as a graph. Each node stands for an algorithmic component whereas the edges between nodes describe the data flow. Concatenations of algorithms and therefore surface inspection solutions can be developed fastly via drag and drop.

After the prototyping phase, you can embed the resulting graph solution into your own applications or you can execute the graph (saved in xml-based format) via command line script. **ToolIP** also provides a Software Development Kit (SDK) with a C/C++-interface. A description of the SDK is included.

Features of ToolIP

The **ToolIP** software package is delivered in combination with an image processing library. It is constantly evolving together with the experience and knowledge we gain from current project work on the one hand and from new scientific developments on the other hand.

ToolIP also comes with an extensive documentation of its visual components. Each algorithm provides its own documentation which can directly be accessed via the blue parameter field on the plugin itself.

The concept of subgraphs allows the user to encapsulate several algorithm plugins in a single subgraph plugin. This increases visual clarity, even if you work with highly complex graphs containing a multitude of algorithm plugins. Such subgraphs can also be stored and re-used in xml format.

The intuitive operability of **ToolIP** allows for rapid prototyping. As the algorithm plugins of **ToolIP** can manually be executed one at a time, comfortable step by step debugging of an image processing graph is possible.

Parallelization in **ToolIP** is implemented on graph level. Parallel branches of the algorithm graph will automatically be executed at the same time, up to the number of kernels available. An integrated performance measurement allows for the timing of single nodes as well as of whole graph branches.

ToolIP Software Development Kit

The **ToolIP** SDK empowers the users to develop their own algorithms using all features and advantages of **ToolIP**. User specific algorithms can be integrated as plugins via C++-interface. The same mechanism allows for the wrapping of other libraries to make their algorithms and functions available in **ToolIP**. **ToolIP** graphs are saved to disk in an all-purpose xml file format which is platform independent.

In this regard, we also offer the 3d image processing toolbox **MAVikit** (Modular Algorithms for Volume Images). **MAVikit** is especially well suited for the characterization of materials microstructures.

Overview

ToolIP is a software tool for the graphical design of complex image processing algorithm solutions developed especially for the automatic on-line inspection of surfaces.

ToolIP comes with an image processing library. Together, they are well suited to develop algorithmic solutions to detect irregularities and defects on the surfaces of your products.

ToolIP is easy to use. Its graphical user interface (GUI) allows fast progress, also for the non-expert user.

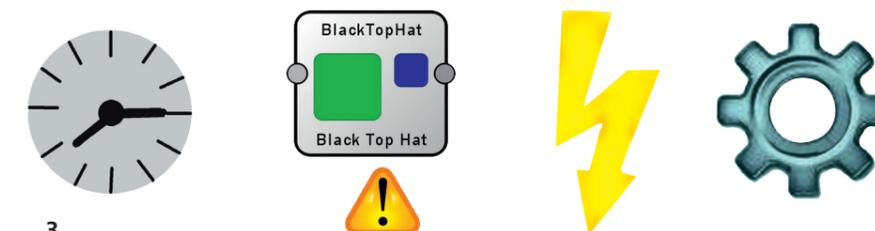
ToolIP focuses on visual clarity. It supports the user in developing image processing solutions via complex but at the same time clearly arranged algorithm graphs.

ToolIP can easily be extended, e.g. you are able to work with your own algorithms by using **ToolIP's** GUI and features through a simple SDK with a C/C++-interface.

ToolIP can be customized to meet your own special requirements. If your applicational needs lie beyond **ToolIP's** standard or extended functionality, do not hesitate to contact us.

2 Screenshot of ToolIP

3 Timing, exception handling, instant execution, personalized settings



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