# HeuristicLab

A Paradigm-Independent and Extensible
Environment for Heuristic Optimization

## Facts

HeuristicLab provides a feature rich software environment for heuristic optimization researchers and practitioners. It is based on a generic and flexible model layer and offers a graphical algorithm designer that enables the user to create, apply, and analyze heuristic optimization methods. A powerful experimenter allows HeuristicLab users to design and perform parameter tests even in parallel. The results of these tests can be stored and analyzed easily in several configurable charts. HeuristicLab is available under the GPL license and is currently used in education, research, and industry projects.

## System Requirements

>> Microsoft Windows XP / Vista / 7 / 8
>> Microsoft .NET Framework 4.0 (full version)

## Download

>> http://dev.heuristiclab.com

## Contact

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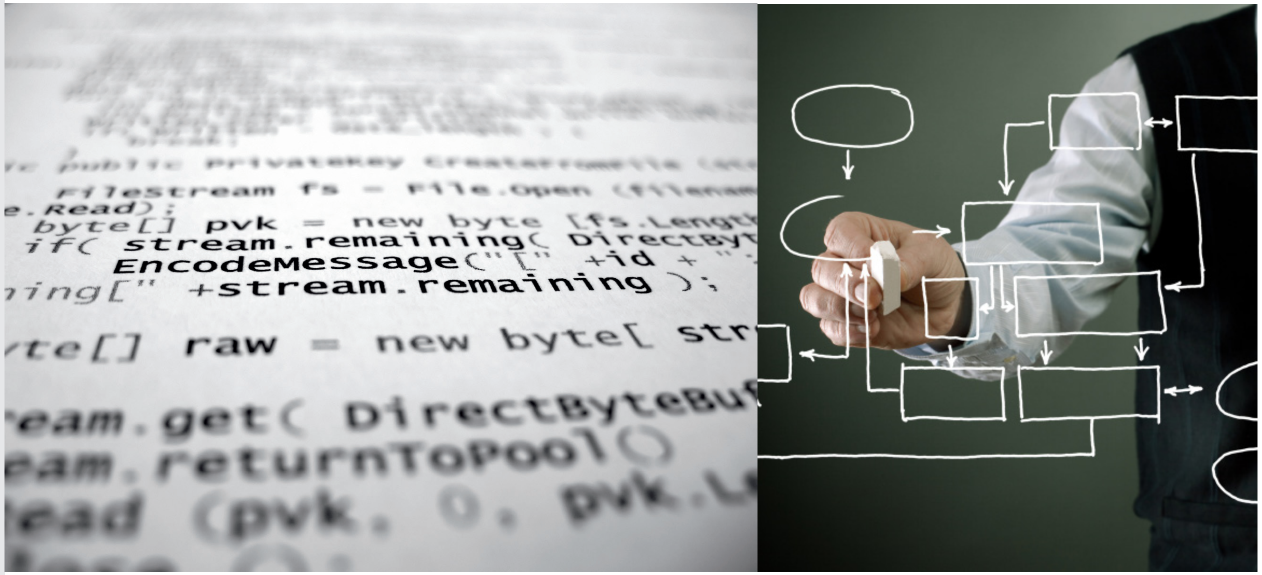

## REFERENCES

AKH LINZ verändert

voestalpine
EINEN SCHRITT VORAUS.

rosenbauer

TRUMPF

carvatech
KAROSSERIE & KABINENBAU GMBH

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# HeuristicLab

dev.heuristiclab.com

## HEURISTICLAB

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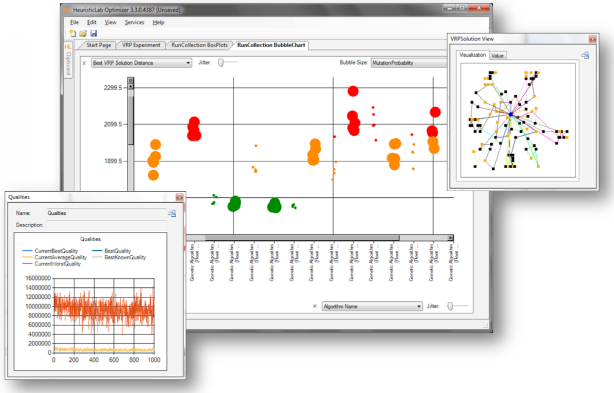
# Features

>> **Rich User Experience**
A comfortable and feature rich graphical user interface enables non-programmers to use and apply HeuristicLab.
>> **Many Algorithms and Problems**
Several well known metaheuristics and benchmark problems are already implemented and available for a quick start.
>> **Algorithm Designer**
Optimization algorithms can be modeled and extended entirely within HeuristicLab using the graphical user interface.
>> **Experiment Designer**
Users can design and execute large experiments by selecting algorithms, parameters and problems.
>> **Analysis**
HeuristicLab enables a comfortable analysis of experiments in a graphical and textual way.
>> **Plugin Infrastructure**
Every functionality in HeuristicLab is available as a plugin. Developers can create and reuse plugins to integrate new features and extend the functionality of HeuristicLab.
>> **HeuristicLab.Hive**
Hive is a parallelization infrastructure designed to perform experiments in parallel on a computing cluster.
>> **HeuristicLab.OKB**
The Optimization Knowledge Base is a common and open data infrastructure designed to store, query, and analyze experiment results.

# HeuristicLab

The development of HeuristicLab started in 2002, when a group of researchers in the heuristic optimization domain decided to build a software system for exploring new research ideas and for teaching heuristics to students. The first version was released in 2004 and quickly became known among heuristic optimization researchers. Since then, HeuristicLab has been improved considerably, but adhered to the initial goals and motivations. HeuristicLab nowadays is an actively used and continuously evolving environment for heuristic optimization.

HeuristicLab includes the following algorithms:
>> Genetic Algorithm
>> Genetic Programming
>> Offspring Selection Genetic Algorithm
>> Evolution Strategy
>> Local Search
>> Simulated Annealing
>> Tabu Search
>> Particle Swarm Optimization
>> NSGA-II
and many more



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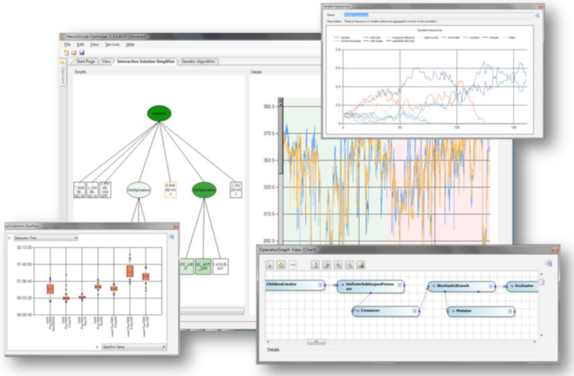
Algorithm developers can use a number of included well-known metaheuristics, a large library of operators, a graphical algorithm designer and an experiment designer to create and test algorithms for solving new challenging problems.

Likewise it takes little effort to model optimization problems in HeuristicLab. Several well-known benchmark problems are already included in HeuristicLab which can be used as is or can be adapted to specific problem scenarios.

HeuristicLab includes the following optimization problems:
>> Traveling Salesman
>> Vehicle Routing
>> Knapsack
>> One Max
>> Real-Valued Test Functions
>> Artificial Ant
>> Symbolic Regression
>> Classification
>> Simulation-Based Optimization
>> Quadratic Assignment
and many more



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