

## Head of the Group Professor Kaisa Miettinen



Kaisa Miettinen is Professor of Industrial Optimization at the University of Jyväskylä. Her main research interests include theory, methods, applications and software of nonlinear (e.g. data-driven) multi-objective optimization including interactive, evolutionary and hybrid approaches.

## Group Members



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J. Hakanen



A. Mazumdar



B. Afsar



A. Kania



B. S. Saini



G. Misitano



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JYVÄSKYLÄN YLIOPISTO  
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# Multiobjective Optimization Group



Collaborators



UNIVERSIDAD  
DE MÁLAGA



Universiteit  
Leiden



Collaborators



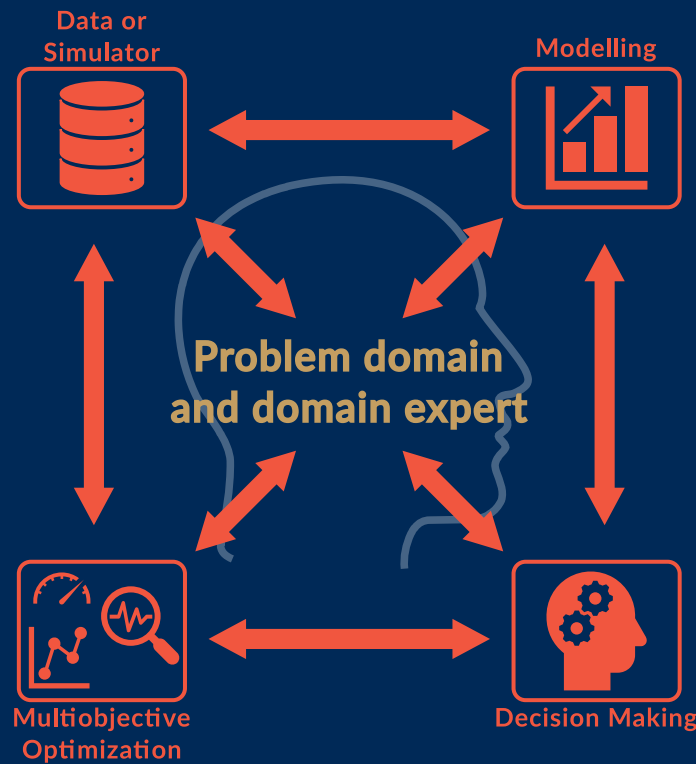
[mit.jyu.fi/optgroup](http://mit.jyu.fi/optgroup)

# Multiobjective Optimization

The Multiobjective Optimization Group develops theory, methodology and computer implementations for solving real-world decision-making problems. The research is inspired by the need of supporting decision making in real-world applications and focuses at (nonlinear) multiobjective optimization, that is, finding the best balance among conflicting objectives.

The Group is active in the thematic research area Decision Analytics utilizing Causal Models and Multiobjective Optimization (DEMO, [jyu.fi/demo](http://jyu.fi/demo)), which specialized in data-driven decision support. The group is also interested in developing visualizations to decision support and employing artificial intelligence and machine learning and, in particular, explainable artificial intelligence.

# Enabling Better Decision Making



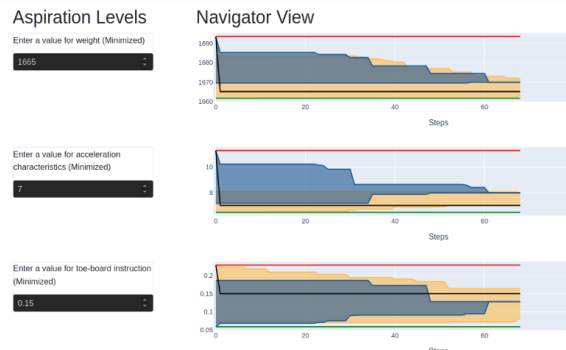
# Method Development

The Group develops interactive, evolutionary and hybrid methods for both simulation-based and data-driven problems. The idea is to support a decision maker in finding the most preferred decision in the presence of conflicting objectives. The Group is one of the few groups that specializes in implementing old and new interactive multiobjective optimization methods.

Interactive method types developed:

- Classification based methods
- Navigation methods
- Trade-off free methods
- Methods where different types of preference information can be provided by the decision maker
- Evolutionary methods
- New paradigm to multiobjective optimization

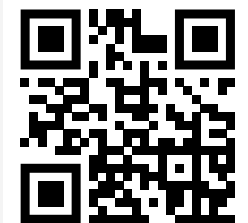
## O-NAUTILUS Navigation



# Software

The DESDEO framework is free open-source software. The mission of DESDEO is to increase awareness of the benefits of interactive methods and make them more easily available and applicable. The framework consists of reusable components that can be utilized for implementing new methods or modifying the existing methods. IND-NIMBUS and WWW-NIMBUS have been developed in our group as well.

# More about DESDEO



[desdeo.it.jyu.fi](http://desdeo.it.jyu.fi)