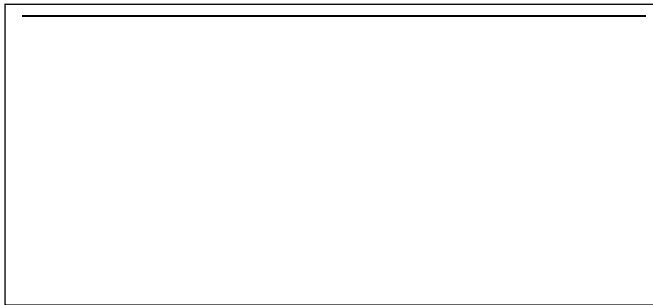


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**GOR-Arbeitsgruppe: Praxis der  
Mathematischen Optimierung**  
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Herewith, we invite you to the 101st meeting of the GOR working group “Real World Mathematical Optimization” in the Physikzentrum Bad Honnef (Hauptstr. 5, 53604 Bad Honnef, <http://www.pbh.de>). This meeting is hold as a symposium with the topic

## Mathematical Optimization meets Machine Learning and Artificial Intelligence

The workshop takes place on November 22 & 23, 2018 on Thursday and Friday.

The working language will be preferably English, since some speakers or participants are expected from abroad.

Note that the participation in a GOR-AG-Workshop for non-members is subject to a registration fee, unless you are a speaker or a host. Except for students, the Physics Center collects an infrastructure fee of 30 Euro/person.

Please register yourself online using <https://www.redseat.de/pmo101/> as soon as possible, but ideally not later than October 26<sup>th</sup>, 2018. The latest information on the meeting is available on the homepage of the GOR (<http://www.gor-ev.de/arbeitsgruppen/praxis-der-mathematischen-optimierung>).

Yours sincerely,

Jens Schulz, Julia Kallrath, Josef Kallrath  
(GOR AG)

**Vorstand:**

Prof. Dr. Alf Kimms (Vorsitz)  
Dr. Ulrich Dorndorf (Finanzen)  
Prof. Dr. Alf Kimms (Tagungen)  
Prof. Dr. Anita Schöbel (Arbeitsgruppen)

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## Mathematical Optimization meets Machine Learning and Artificial Intelligence

This symposium focusses on successful applications that combine techniques from Mathematical Optimization with those from Machine Learning and Artificial Intelligence. In machine learning, the target is to make computer systems learn from historical data and relationships. Based on this, reliable decisions are generated and hidden insights can be uncovered, also known as *predictive analytics*. Most prominent examples as of today are pricing mechanisms and online advertisement. In Mathematical Optimization, the target is to find the best values for a set of variables that are subject to constraints which limit the potential solution space. Various applications from engineering and economics exist that can only be successfully handled by the use of mathematical optimization techniques. The term Artificial Intelligence is commonly used when a machine agent (like in computer games) acts like a human, i.e., it makes decisions, learns or solves complex problems. Examples are strategic games (chess and Go) or autonomous cars.

Definitely, there is a huge overlap among the applications and also among the methods applied in the three fields. While these have evolved partially separately, their interplay in algorithms and decision making processes becomes more and more important as the data availability, computing power and memory availability have increased tremendously.

### Aim of the workshop

This two-day event attempts to give an overview of the current state-of-the-art of the interplay of techniques from Mathematical Optimization, Machine Learning and Artificial Intelligence in theory and practice. Because of the many applications fields we expect a broad spectrum of talks and fruitful discussions that penetrate the use of these methods in real world applications and stimulate further research directions.

Please contact one of the organizers if you are interested in presenting at this workshop.

In talks, either 15+5 min, 25+5 min or 40+5 min by choice, experts from practice, research institutions or software companies, will present selected problems and the corresponding solutions.

Experts from universities, research institutions, industry and software companies are welcome to present selected problems and available solutions.

Please contact:

Jens Schulz (schulz-gor 'at' gmx.net), Julia Kallrath (julia.kallrath 'at' h-da.de) or Josef Kallrath (josef.kallrath 'at' web.de) if you are interested in presenting.

### Presentations from the following speakers have been confirmed:

Prof. Dr. Marco Lübbecke (RWTH Aachen, Aachen)  
*Introductory talk tba*

Dr. Hergen Schulze (BASF SE, Ludwigshafen)  
*tba*

Oliver Bastert (FICO, München)  
*Optimizing Machine Learning*

Sebastian Hilgert (Deutsche Bahn, Frankfurt)  
*tba*