

ONE PAGE EXPERTISE DESCRIPTION

The aim of this document is to introduce your organisation to potential project leaders. Since there are hundreds of such descriptions circulating throughout Europe, please keep it short, concise and precise so potential project coordinators can quickly assess if your contribution would be useful. This document does not aim to provide an extensive overview of your activities, but to show in a few words your added value relevant to a specific topic or group of topics. **Please fill in one form per field or research/expertise.**

INFORMATION ABOUT THE EXPERT

ORGANISATION	ARTIFICIAL INTELLIGENCE & ALGORITHMS LAB / UCLouvain
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DATE OF PUBLICATION	
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EXPERTISE OVERVIEW

TOPIC(S) OF INTEREST:

HORIZON-CL4-2023-HUMAN-01-01: Efficient trustworthy AI - making the best of data (AI, Data and Robotics Partnership) (RIA)
 HORIZON-CL4-2023-HUMAN-01-04: Open innovation: Addressing Grand challenges in AI (AI Data and Robotics Partnership) (CSA)

HEADLINE:

Combining data and combinatorial optimization

POTENTIAL CONTRIBUTION:

Our lab performs fundamental research on algorithms for combinatorial optimization, data mining and machine learning, with a specific focus on and expertise in how to combine these domains. Building efficient trustworthy AI requires this combination of expertise: trustworthiness can be seen as an additional requirement that is imposed on machine learning models, for which new optimization algorithms are necessary. Moreover, to make these algorithms efficient, a good understanding of algorithms is necessary, and may require optimization in itself. We developed efficient algorithms in the past that can take into account constraints and do not require large amounts of data. Examples of our publications are:

Anna L. D. Latour, Behrouz Babaki, Daniël Fokkinga, Marie Anastacio, Holger H. Hoos, Siegfried Nijssen: Exact stochastic constraint optimisation with applications in network analysis. Artif. Intell. 304: 103650 (2022)

Gaël Aglin, Siegfried Nijssen, Pierre Schaus: Learning Optimal Decision Trees Using Caching Branch-and-Bound Search. AAAI 2020: 3146-3153

Christian Bessiere, Luc De Raedt, Tias Guns, Lars Kotthoff, Mirco Nanni, Siegfried Nijssen, Barry O'Sullivan, Anastasia Paparrizou, Dino Pedreschi, Helmut Simonis: The Inductive Constraint Programming Loop. IEEE Intell. Syst. 32(5):44-52 (2017)