

HABILITATION THESIS REVIEWER'S REPORT

Masaryk University

Applicant

RNDr. Vít Musil, Ph.D.

Habilitation thesis

Bridging Continuous Learning and Discrete Optimization in Artificial Intelligence

Reviewer

Assoc. Prof. Mirco Giacobbe

**Reviewer's home unit,
institution**

University of Edinburgh

The thesis presents excellent results on a very important problem, that is, differentiable programming, which is a highly relevant question in the age of AI safety and security, and its explainability. The venues in which the results are published speak for themselves, and the breath of the work spans across combinatorial optimisation to control and planning. This demonstrates not only the technical depth but also the vision of the candidate.

Reviewer's questions for the habilitation thesis defence (number of questions up to the reviewer)

The thesis puts great focus on the performance of a differentiable programming approach to combinatorial optimisation, planning and control, but scarce emphasis is given on the soundness guarantees of the result. While a single solution of a combinatorial problem can be evaluated, how about (1) unfeasibility proofs and (2) convergence guarantees? Are these algorithms guaranteed to find a solution when one exists, or similarly, how can we tell than one does not exist when the algorithm stops?

Conclusion

The habilitation thesis entitled Bridging Continuous Learning and Discrete Optimization in Artificial Intelligence by RNDr. Vít Musil, Ph.D. **fulfils** requirements expected of a habilitation thesis in the field of Informatics.

Date: 08/09/2026

Signature: