SCML: A Publishing Forum for Symbolic Computation and Machine Learning

An Initiative of the Research Institute for Symbolic Computation (RISC)

Continuous Call for Papers

The SCML publishing forum is dedicated to all research that strives to combine Symbolic Computation (SC) and Machine Learning (ML) as two major approaches to "Artificial Intelligence", in particular the application of ML to SC, the application of SC to ML, and the hybrid combination of SC and ML to solving problems. We consider submissions that explore the interaction between the two fields - not standalone works on either SC or ML.

Examples of topics in the scope of SCML are (this list is not exhaustive, we expect that it will grow rapidly with the evolution of the field):

- Applying ML to computer mathematics, algebra, geometry; integrating ML into mathematical software.
- Applying ML to automated reasoning, theorem proving, satisfiability solving; integrating ML into provers.
- Applying ML to program synthesis; integrating ML into program verification systems.
- Applying SC to analyzing ML models ("explainable AI"), ensuring robustness, interpreting answers.
- Applying SC to verifying ML models ("verified AI"), preventing errors and hallucinations.
- Applying SC to synthesizing ML models with guaranteed error bounds, robustness, correctness properties.
- Integrating SC capabilities (such as computer algebra and automated reasoning) into ML models.
- Applying LLMs to the automatic formalization of mathematical/logical texts.
- Applying LLMs as natural language interfaces to SC systems, integrating co-pilots into SC systems.
- Combining linguistic reasoning (LLMs) and formal reasoning (theorem provers).
- Combining LLMs and SC systems for education.
- Teaching (for example, in mathematics) using a combination of SC and ML systems.
- Software and system descriptions, datasets, benchmarks, and metrics related to the interplay of SC and ML.

SCML primarily solicits papers that present original research results but also accepts survey and position papers that add a new perspective to the interplay of SC and ML.

Submission

SCML papers can be continuously submitted (see the link to the right) and enter the reviewing process immediately after their submission. The final versions of accepted papers are published in the electronic RISC Proceedings on Symbolic Computation and Machine Learning. They are archived with a DOI and are freely available for download from the SCML web page under a Creative Commons License. Authors of accepted papers are expected to present them at a subsequent SCML workshop. These SCML workshops take place in semi-regular intervals in purely online form (via Zoom), typically in half a day. Authors of accepted SCML papers that present original research may be invited to submit extended versions of their papers to the SCML Track of the Journal of Symbolic Computation.

https://scml.risc.jku.at