

Call for Papers

The IJCAI-21 workshop on Deep Learning, Case-Based Reasoning, and AutoML: Present and Future Synergies

To be held as a half day workshop. Date TBD during the International Joint Conference on Artificial Intelligence (ijcai-21.org), 21-26 August, 2021. Location: Online.

Deep learning (DL) research has made dramatic progress in recent years, achieving high performance on supervised learning tasks for numerous problem domains. Simultaneously, there remain well-known challenges such as the need for large amounts of labeled training data, solving synthesis problems with structured solutions (e.g., designs, plans, or schedules), and explainability. Case-based reasoning is a knowledge-based methodology for reasoning from prior episodes, with complementary capabilities—such as to solve problems with small data sets or those requiring structured solutions, and to generate concrete explanations—and limitations. AutoML concerns processes for automatically generating end-to-end-machine learning (e.g., DL) pipelines, and could use techniques that build pipelines from prior cases (of successful pipeline components). This workshop will bring together researchers interested in DL, CBR, and AutoML to identify new opportunities and beneficial strategies for integrating these approaches to address current challenges.

Our goal for this workshop is to bring together members of the DL, CBR, and AutoML communities to identify new opportunities for leveraging the case-based reasoning methodology to advance deep learning and DL to advance CBR, to identify opportunities and challenges for leveraging CBR for AutoML, to examine related efforts from all three subareas, and to develop approaches for advancing such integrations. The workshop will include a substantial discussion component.

Potential subtopics include, but are not limited to:

- New theoretical approaches for integrating CBR and DL
- Approaches for using CBR to guide selection of problem-appropriate DL architectures and to guide composition of DL architectures
- Using the case-based cycle as a framework for combining DL components or integrating them with other technologies
- Adding solution adaptation processes to deep learning
- CBR-DL integrations for:
 - Few-shot learning
 - Generating structured solutions
 - Reducing the sizes of trained networks
- Developing a CBR-inspired DL pipeline
- CBR support for AutoML
- Presentation of results on existing integrations
- Discussion on challenge problems from DL, CBR, or AutoML

For further discussion of some of these topics, see “[On Bringing Case-Based Reasoning Methodology to Deep Learning.](https://homes.luddy.indiana.edu/leake/papers/p-20-03.pdf)” (<https://homes.luddy.indiana.edu/leake/papers/p-20-03.pdf>)

Submissions

Submissions may be long papers (up to 6 pages body + up to 2 pages of references), short papers (up to 4 pages including references), or position papers (2-3 pages including references). All submissions will be in IJCAI format. See the workshop web site for submission details.

Workshop Web Site

<http://vision.soic.indiana.edu/deepcbr-2021/>

Important Dates

Submission Deadline: May 7, 2021

Notification Date: May 25, 2021

Workshop Date: A half day TBD during 21-26 August, 2021

Contact for Questions

For more information, please contact please contact deepcbr-2021@googlegroups.com

Workshop Organizers

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4/20/2021