Neurosymbolic Architectures to Approach Human-like AI

Neither symbolic AI nor deep neural nets alone have reproduced the kind of intelligence expressed in humans. This is because, symbolic AI fundamentally lacks the ability to learn directly from examples, while neural nets are not able to dynamically bind information—an open problem that caused the persistent failure of neural nets to reuse knowledge and generalize systematically. In this internship project, we plan to combine the best of both worlds to approach human-level intelligence. Specifically, we will devise a novel look at data-driven representations, associated operations, and reasoning engines.

In this internship project, new neurosymbolic architectures and models will be developed to demonstrate the superiority of neurosymbolic learning and reasoning in various visual abstract reasoning tasks. This will spur the development of complementary approaches that combine deep learning advancements with symbolic AI to express their strengths and supplement their weaknesses.

The intern will run experiments on real world data, develop new models, and report the findings in scientific publication(s). The expected duration of the internship is 6 months.

Requirement

- Strong programming skills in Python
- Strong analytical and problem-solving skills
- Excellent communication and team skills
- Experience with AI/machine learning techniques
- Experience using essential Python libraries such as Scikit-learn, Theano, NumPy, Matplotlib
- Experience with TensorFlow or PyTorch machine-learning frameworks

If you are interested in this challenging position on an exciting new topic, please send your most recent curriculum vitae including a transcript of grades by email to: Dr. Abbas Rahimi (abr@zurich.ibm.com)