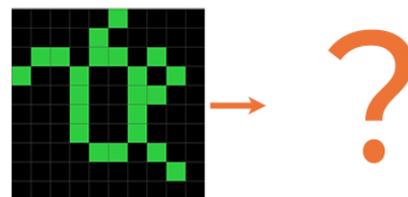
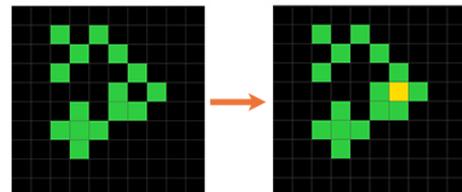
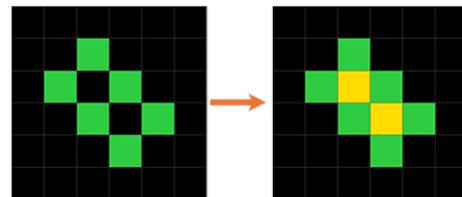




ARC Challenge

The Abstraction and Reasoning Corpus (ARC) is like an IQ test for machine intelligence, allowing us to quantify progress towards human-level AI. It was introduced in 2019 by François Chollet as a [Kaggle](#) competition. Rather than focusing on a single specific challenge, the aim of ARC is to provide an ensemble of challenges to measure the ability to handle and adapt to new unseen environments. One task of the ARC usually consists of three given samples with input and output pairs. For a fourth sample, only the input is given and the output must be produced. These challenges seem easy for humans to solve, however machines, at least for now, struggle with them a lot. The implicit assumption is that we humans can rely on existing "priors" and knowledge that help us tackle these tasks. Therefore, a central aspect of ARC is to make these priors more explicit and try to incorporate them into learning systems.

Recently, due to the initiative of [Lab42](#) the ARC challenge has been revived and a new round of the competition is online. The objective of this thesis is two-fold: We want to participate in the challenge and make progress with new innovative ideas to advance the current state of the art. On the other hand, we would like to inspect and evaluate the ARC dataset to create a new custom method for evaluating progress towards solving ARC tasks. One possible approach is to dissect the tasks into its individual parts and create new challenges to solve them individually, simplified versions, combinations of them or a simplified evaluation.



Requirements: Strong motivation, knowledge in deep learning, or a solid background in machine learning. Previous experience with Python and libraries such as TensorFlow or PyTorch is an advantage. We will have weekly meetings to discuss open questions and determine the next steps.

Interested? Please contact us for more details!

Contact

- Joël Mathys: jmathys@ethz.ch, ETZ G63
- Benjamin Estermann: besterma@ethz.ch, ETZ G60.1