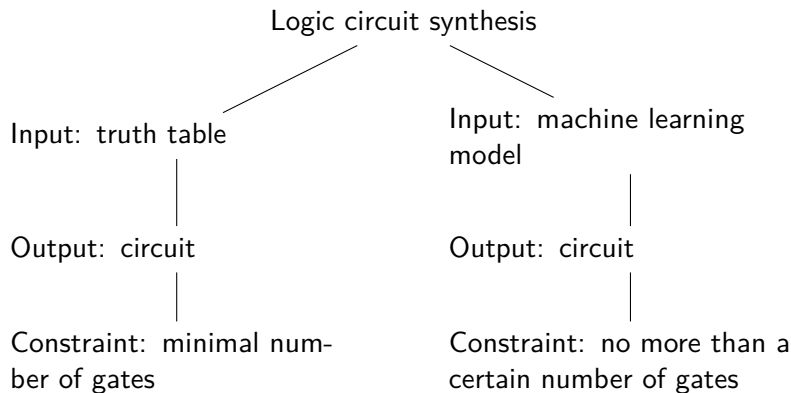


Tuning the Learning of Circuit-Based Classifiers

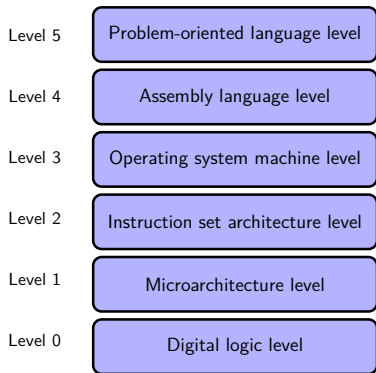
Master Thesis

Bernhard Gstrein

Context



Context



- ▶ Why not skip layers?
 - ▶ Faster execution speed
 - ▶ Edge device implementation
- ▶ How to find a circuit that implements ML model?

Our Approach

- ▶ Training and conversion all-in-one
- ▶ Building a lookup-table network from a training set [1]
- ▶ Improved algorithm a little [2]
- ▶ Resulting predictive systems were weak, however

Future Work

- ▶ Most likely start with binarized neural network
- ▶ Clever heuristics to convert to circuit step by step
- ▶ MaxSAT or other SAT-based approaches

References I

- [1] S. Chatterjee, “Learning and memorization,” in *International conference on machine learning*, 2018, pp. 755–763.
- [2] B. Gstrein, “Tuning the learning of circuit-based classifiers.” 2022. Available: <https://resolver.obvsg.at/urn:nbn:at:at-ubl:1-51538>