

AN Artificial Neural Architecture Search

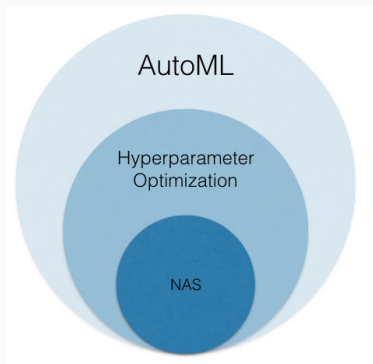
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Deep Learning Course - M1

General Idea

What is a NAS



AutoML: Automating tasks in DL,

NAS: Automating model creation and tuning.

Research started in 2017 with *Neural Architecture Search with Reinforcement Learning* (Google Brain).

Is it working?

More Benchmarks? NAS is how Google is building current State of the Art models

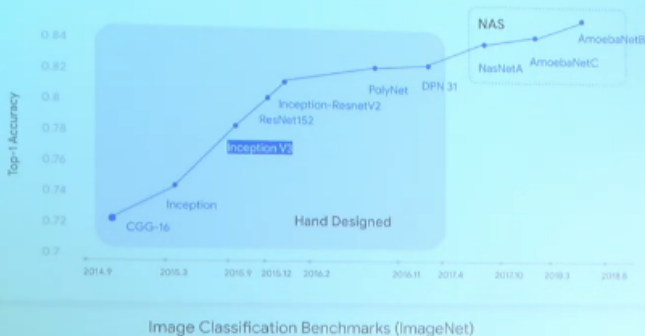


Figure 1: Source: Google Cloud Next 2022

How it works

- **Model search spaces** (operations allowed, activation functions, ...)
- **Search strategy** *Estimate* the performance of possible NNs in the space
- **Search algorithm** Receives some metrics about the possible NNs and make a choice. We will optimize it.
- **Model evaluation**: Depends of the usage, some wants a trade-of between speeds and accuracy, some wants full accuracy, ...

Main idea

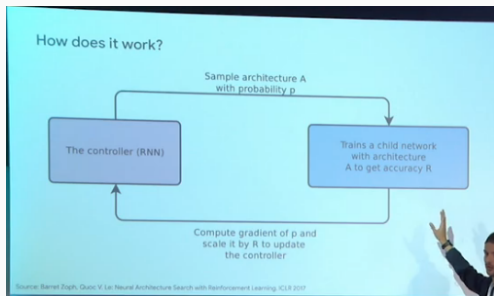


Figure 2: Workflow illustration (Google Cloud Next 2022)

We are free to define the reward, the optimization policy and what we allow to compute.

Costs a lot to train at first but then we can generate model with a fewer cost.