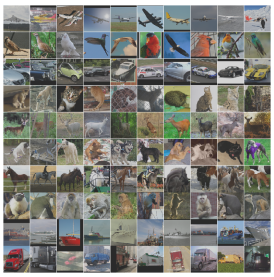
NGCM ML Workshop

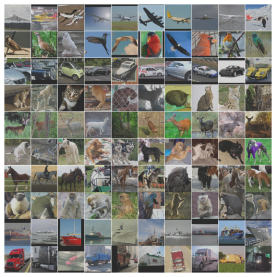
When Machine Learning Works



ImageNet, Alpha Zero

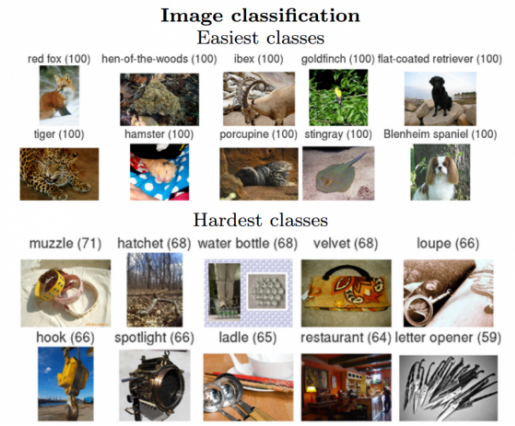
Outline

1. **Image Net**
2. Alpha Zero

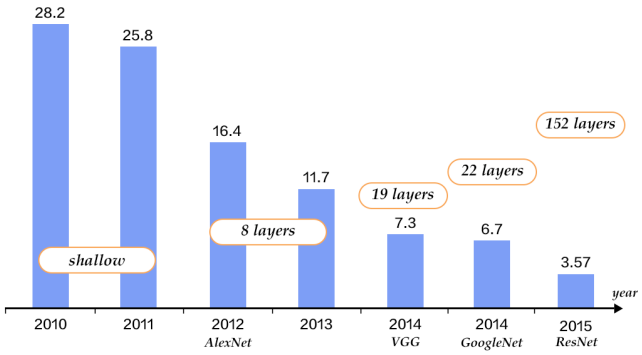


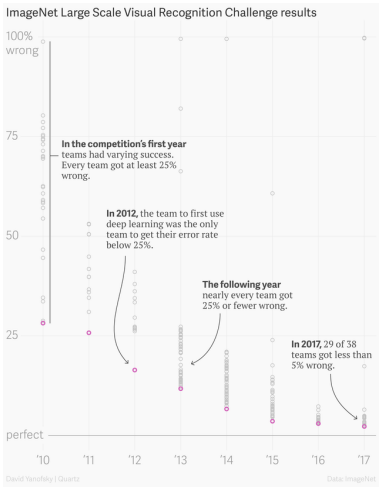
ImageNet

- ImageNet was set up to create a databases of images of different objects
- Similar to WordNet, a dictionary/ontology of words
- It was quickly turned into a competition to get a computer to identify 1000 categories of objects
- The competition *ImageNet Large Scale Vision Recognition Competition* is probably why we are here!



Results





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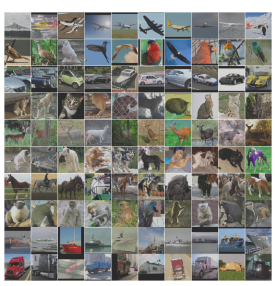

AlphaGo

- The board game Go had been a long running challenge for AI fore years
  - ⋆ It has a massively larger search tree than chess
  - ⋆ Board evaluation is very hard
- In October 2015 Alpha Go developed by *Deep Mind* beat a professional Go player for the first time
- It beat the world number 1 in 2017
- Used Deep CNN to evaluate board position

Alpha Zero

- In October 2017 *Deep Mind* published AlphaGo-Zero
- A very clever redesign it learnt Go entirely by self-play
- It beat the existing Alpha-Go
- Last month the same team published Alpha-Zero that uses the same algorithm to play Go, Shogi and Chess
- It beats the best computer chess algorithm using 500-1000 less search than conventional chess programs