

How autodiff changed the world

02457 Machine Learning Operations

Nicki Skafte Detlefsen,

Postdoc

DTU Compute

Who am I?



- Bachelor, Master and PhD from DTU
- Currently: Postdoc at section for cognitive systems
- Focus: Inductive biases in deep learning
- Eager open-source contributor

The screenshot shows the GitHub profile of Nicki Skaft. The profile includes a circular profile picture, the name 'Nicki Skaft', and the handle 'SkaftNicki'. Below this, it states 'Postdoc at section for Cognitive Systems (CogSys), Technical University of Denmark (DTU). Main focus: Generative models and geometrical deep learning.' and provides an 'Edit profile' button. The profile also shows '49 followers · 3 following · 31 stars', location 'Denmark', and email 'skaftenicki@gmail.com'. There are sections for 'Achievements' (showing a GitHub logo), 'Highlights' (showing '19 discussions answered'), and 'Organizations' (showing logos for DTU, CogSys, and others). The main content area displays 'Pinned' repositories: 'ddtn', 'libcpab', 'unsuper', 'Deep_LMNN', 'pyclust', and 'py_uci'. At the bottom, there is a 'Contribution activity' section showing a calendar heatmap for the last year with 1,075 contributions, and a summary stating 'Created 42 commits in 4 repositories'.

Course settings



- 5 ECTS
- 3 week period (summer or winter)
- Level: Master
- Grade: Pass/not passed
- Type of assessment: weekly project updates + final oral examination/presentation
- Recommended prerequisites: 02456 (Deep Learning)

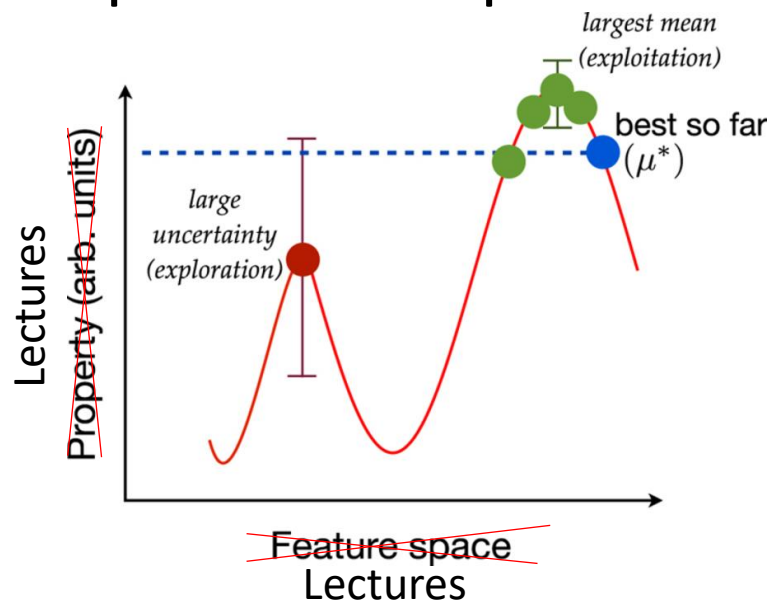
What is this course/What is it not



- Introduce the student to a number of coding practices, that will help them do state-of-the-art research. To provide hands-on experience with a number of frameworks for doing deep learning.
- Keywords:
 - Organisation
 - Scalability
 - Reproducibility
 - Hands-on experience
- How deep learning models works (02456)

What do I expect from you

- This course was developed over 1 month, meaning that the material may be suboptimal
- Make sure to both explore and exploit it!

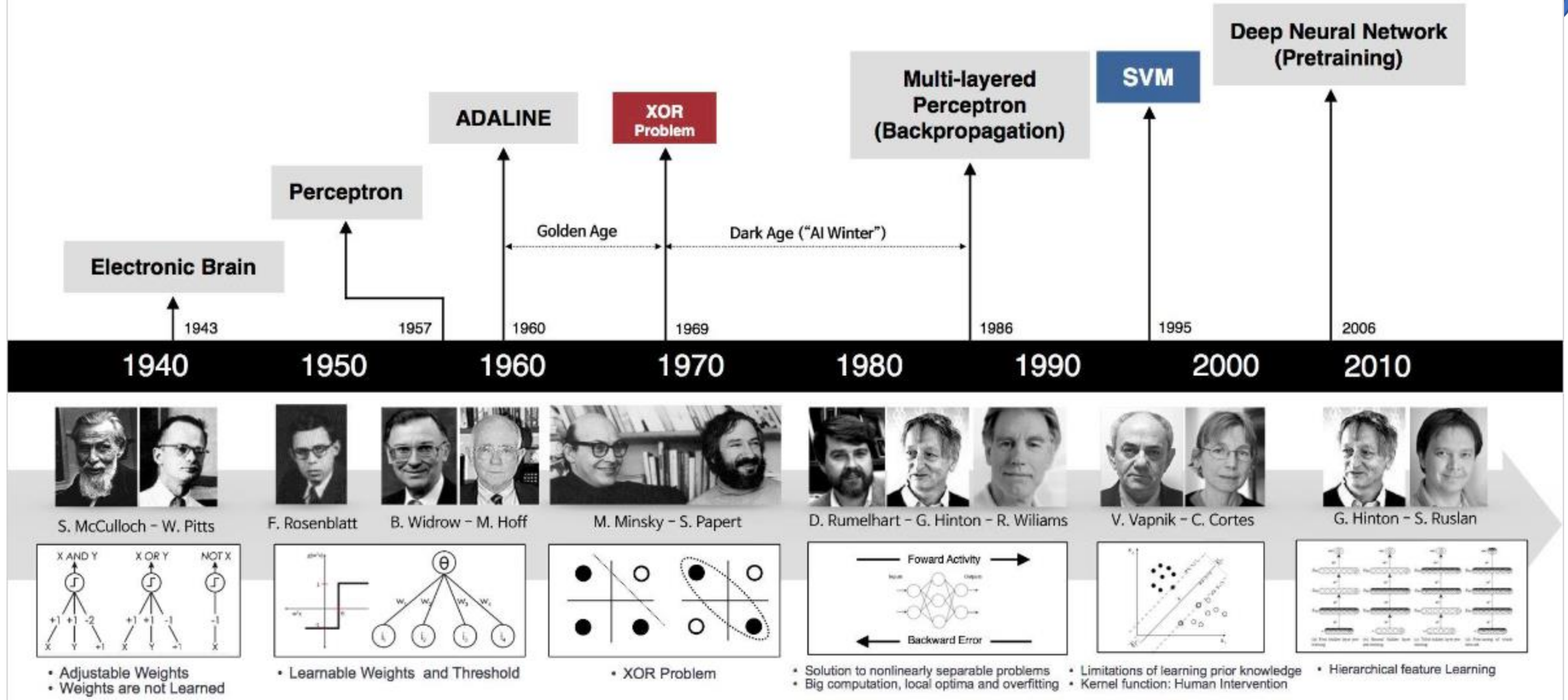


- Provide all the feedback you have, I can take it!

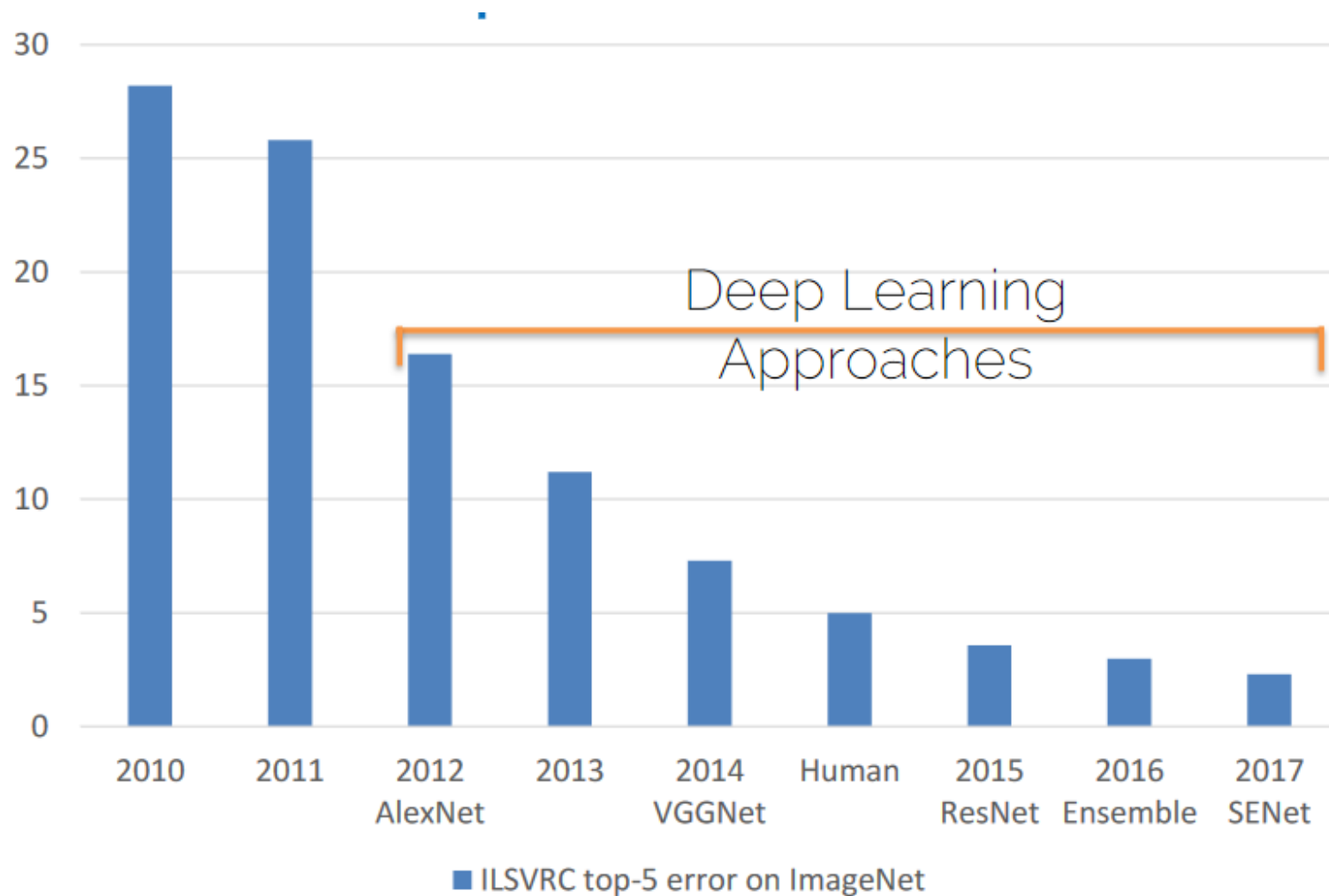


History of deep learning

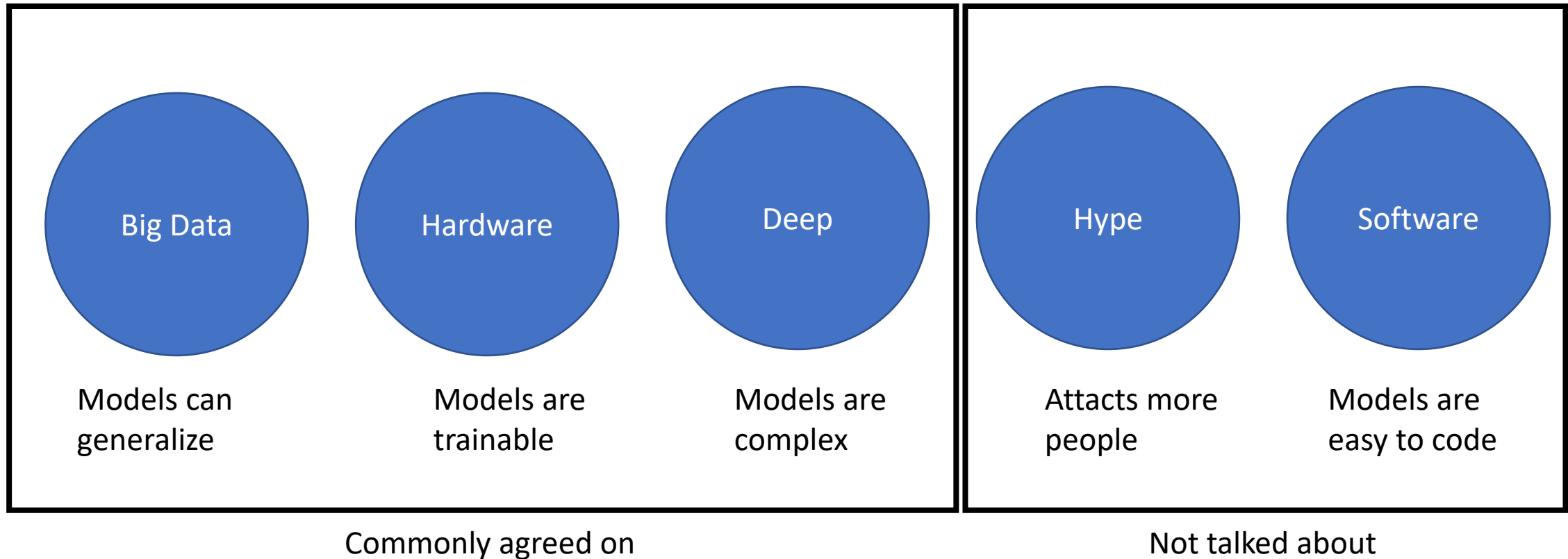
History of deep learning



The Deep Learning Revolution



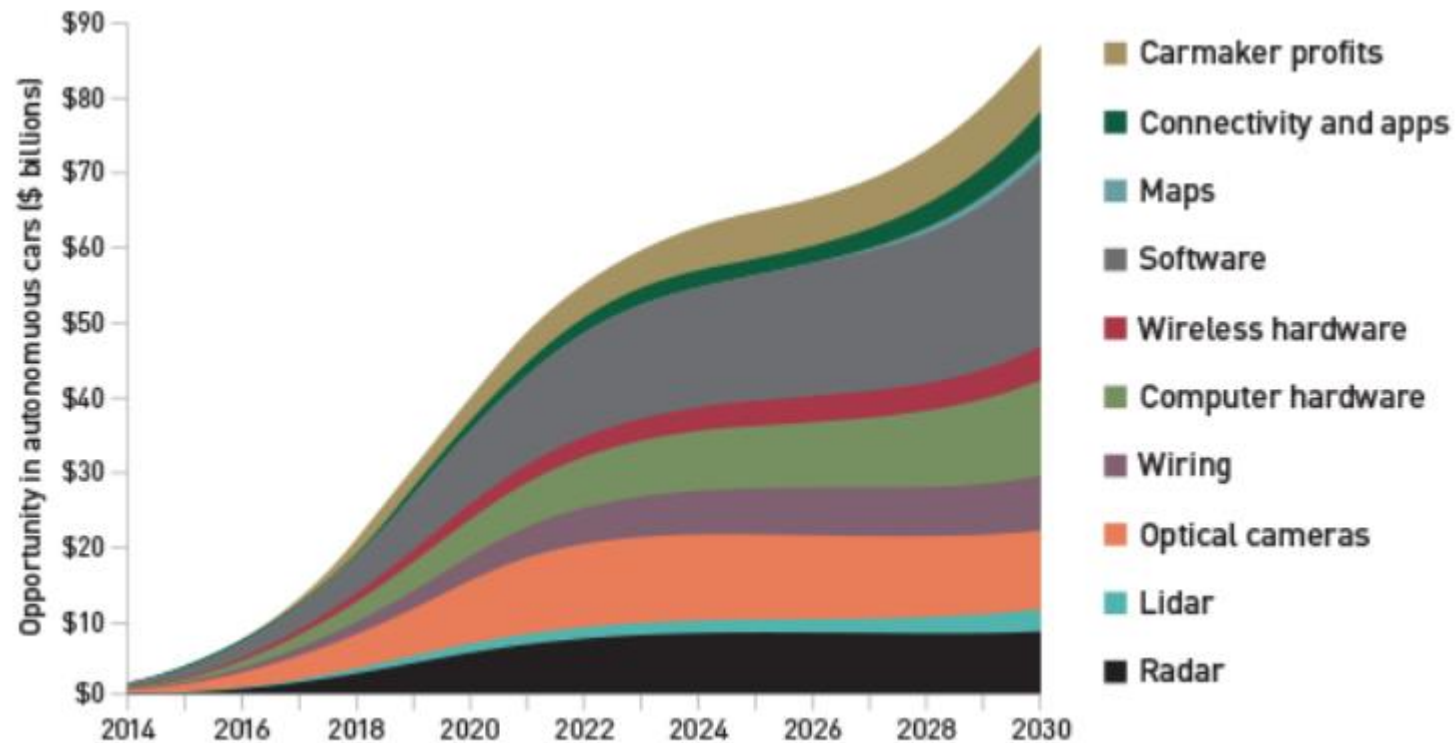
What has changed?



Why you should jump the weagon



“... the deep learning market is expected to be worth USD 1,722.9 Million by 2022”



The DL software landscape



The Google logo, featuring its characteristic four colors: blue, red, yellow, and green.



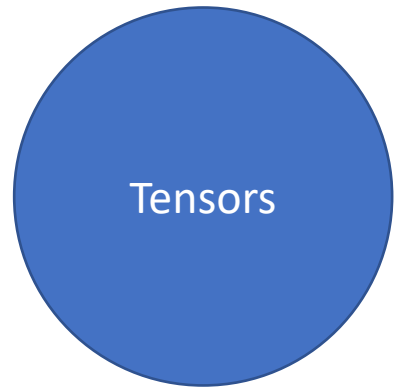
The Facebook logo, consisting of the word "facebook" in white lowercase letters on a blue rectangular background.

The PyTorch logo, featuring an orange flame-like icon followed by the word "PyTorch" in a black sans-serif font.

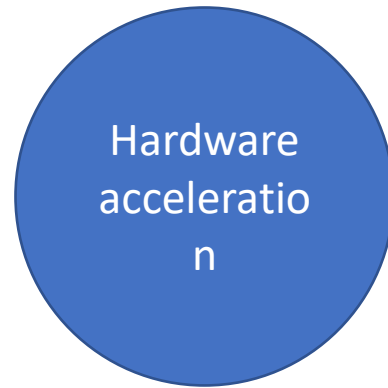
No point in discussion who is best. The (biased) facts are:

- Tensorflow are too a large extend used in production
- Pytorch is used in research

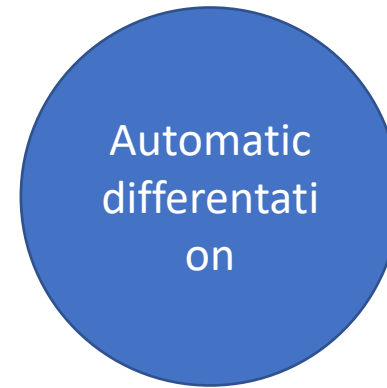
How to make a modern deep learning framework



Abstraction
to higher
order data



Faster
computations



Ease of use

Meme of the day

