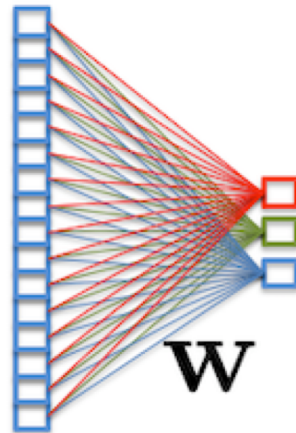
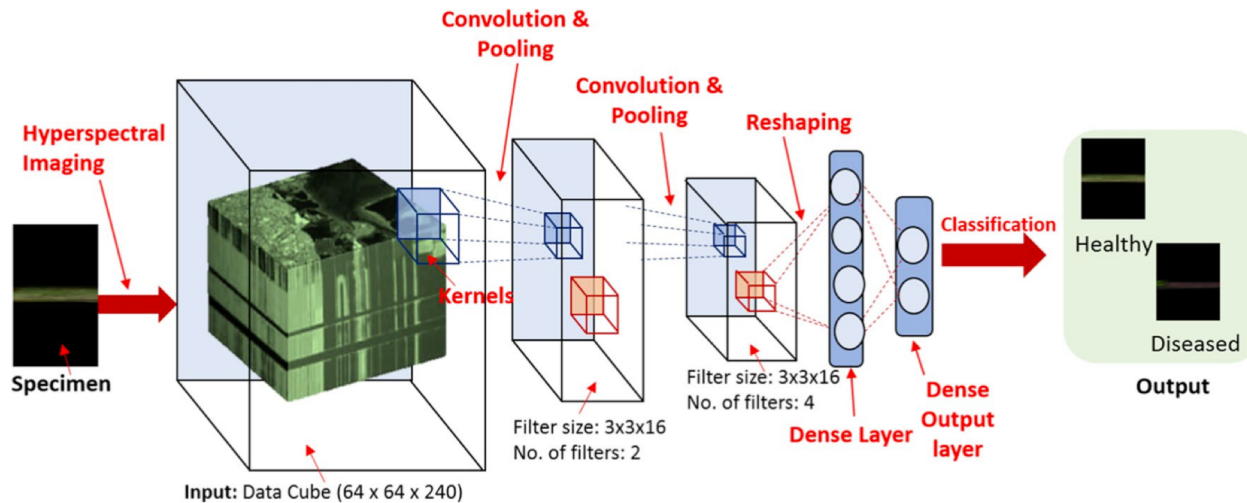


5IF - Deep Learning and Differentiable Programming

5.5 Conclusions





Nagasubramanian et al, Plant Methods, 2019

Deep learning: training of **high capacity models** (tens of millions of parameters) on **vast amounts of data**.

Best results require annotations.

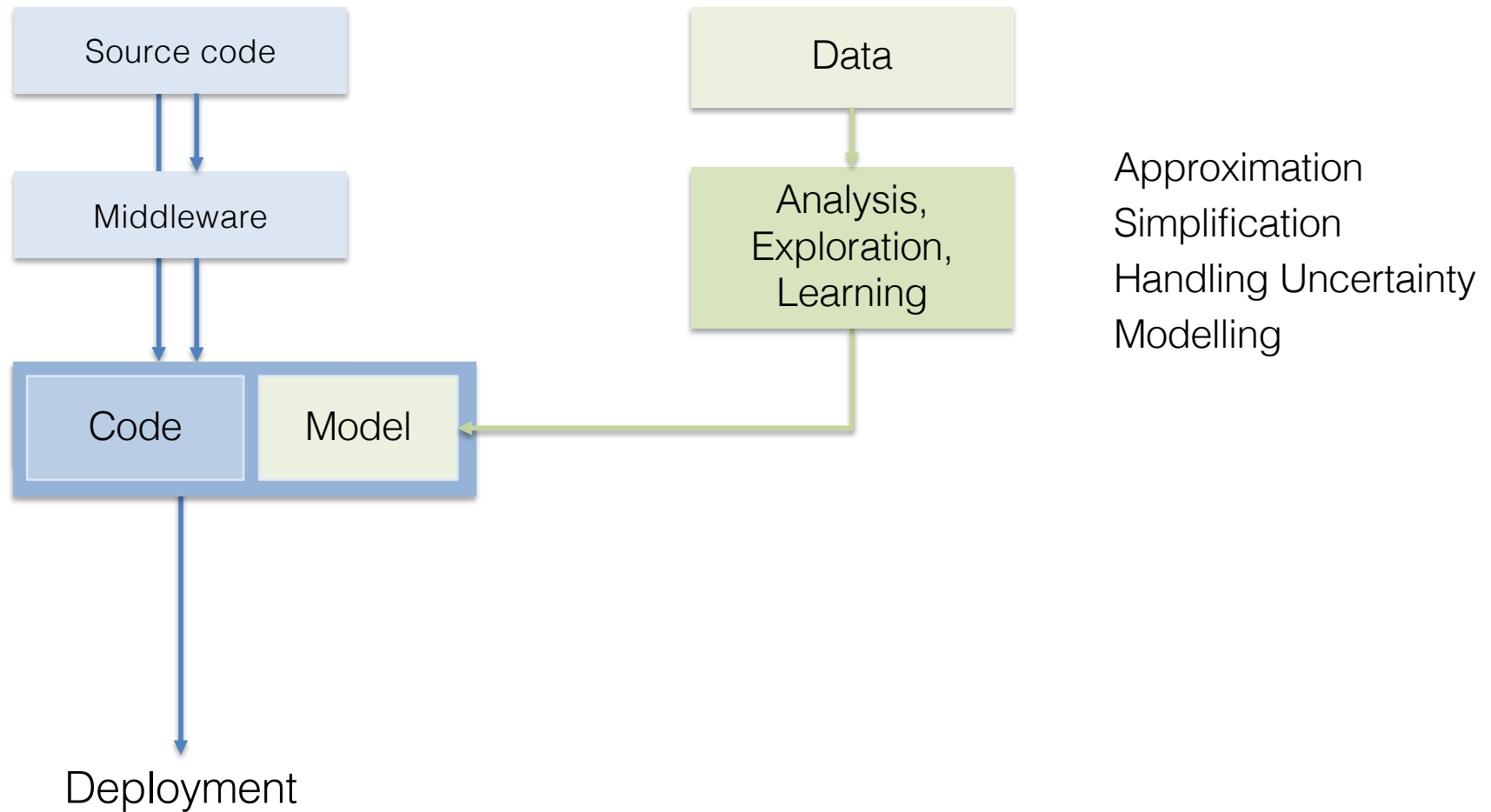
Pre-training from unlabeled data can significantly boost performance.

Knowledge transfer from third-party datasets (pre-trained models) is possible.

Advantages / Drawbacks of Deep Learning

- + Reduced feature engineering
- + If done properly (data!), increased robustness
- Requires large datasets
- Labeling costs
- Does not generalize beyond the data
- Can find undesired short cuts in learning (“Clever Hans effect”)

Impact on software development



What is important?

- 1 Data
- 2 More data!
- 3 Even more data!!

Only one thing can replace data: more data