

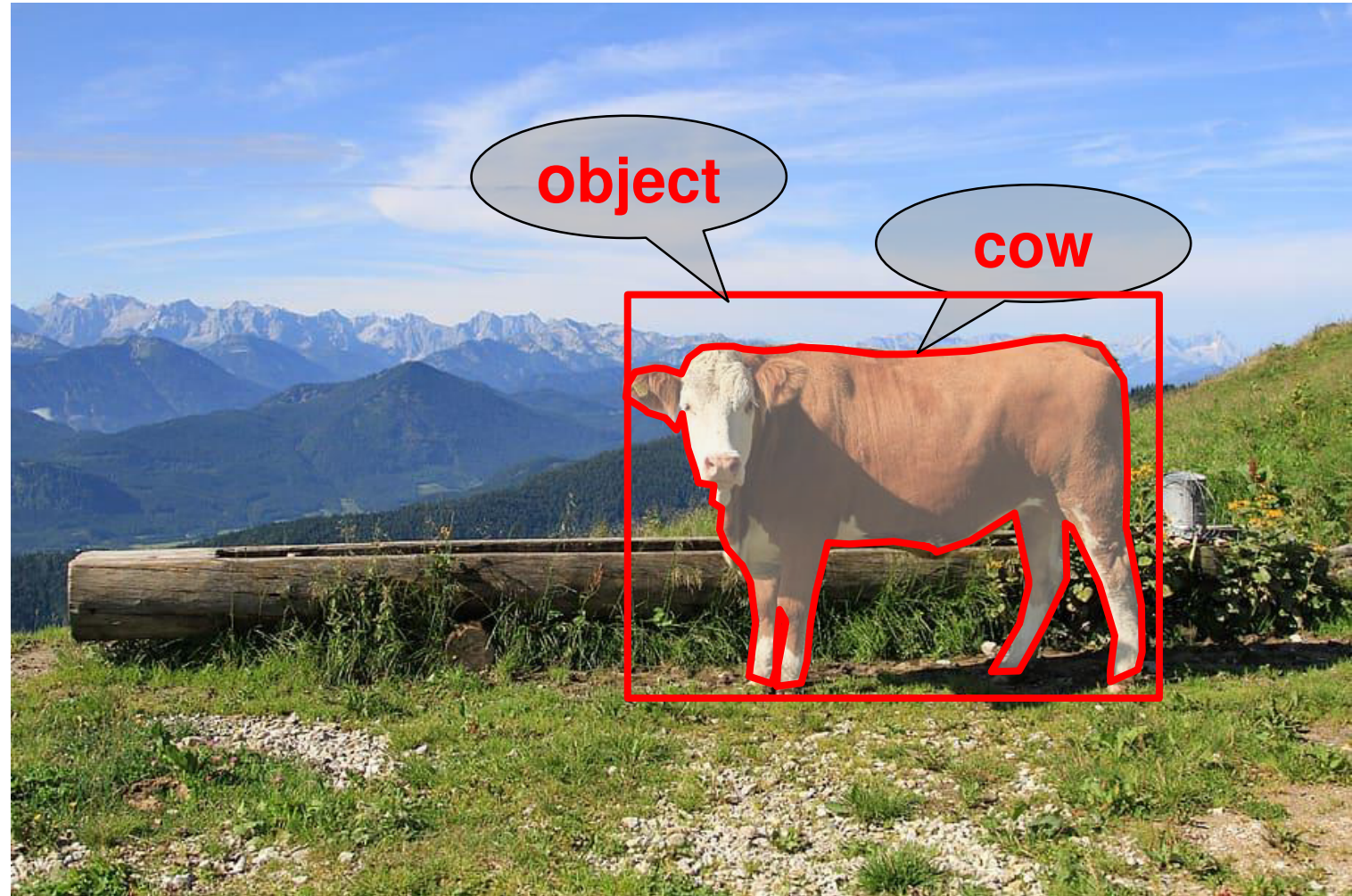
# Unit 04 Deep Learning - Just another Learning?

Introduction





# Object detection and classification



Credits: <https://p1.pxfuel.com/preview/359/465/210/meadow-grass-landscape-agriculture.jpg>

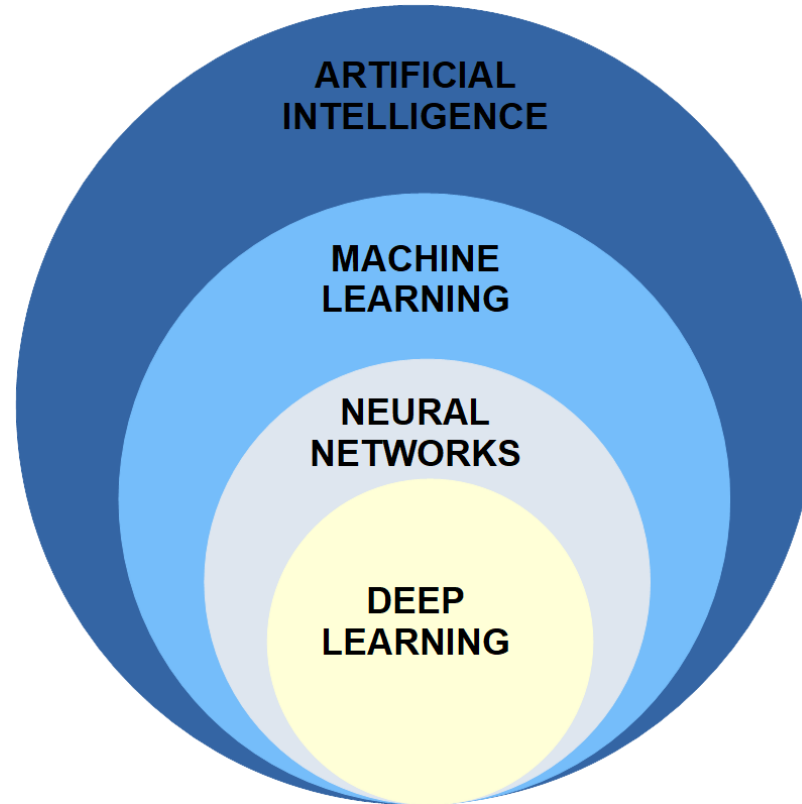
See you next time!

# Deep Learning - AI for high-resolution imagery





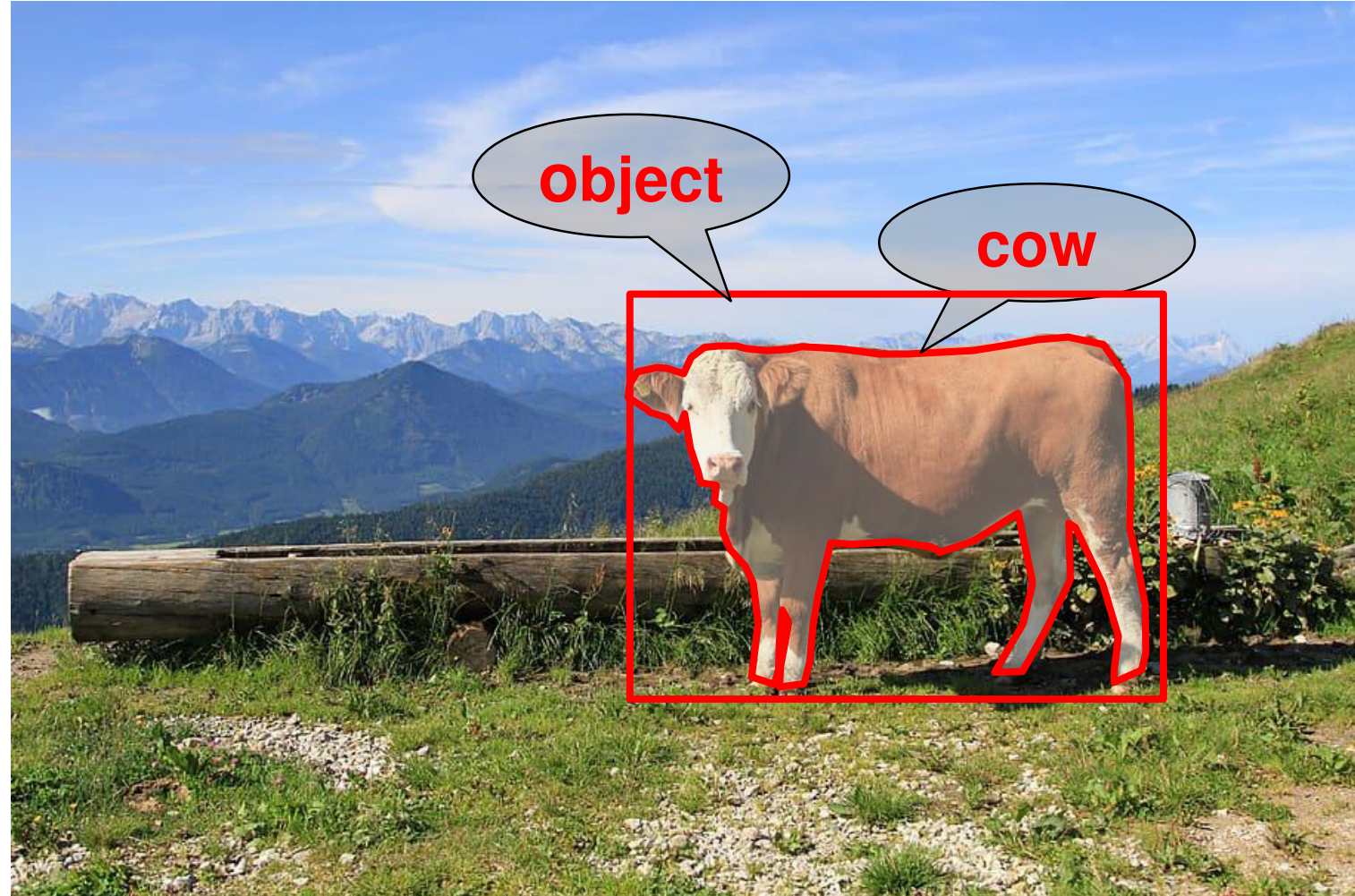
# Deep Learning – Just another Learning?



Credits: <https://geomoer.github.io/geoAI/>

# What do we need conceptually?

- Define object animal
- Identify object(s) in arbitrary images
- Segment exact object and classify it according defined training rules

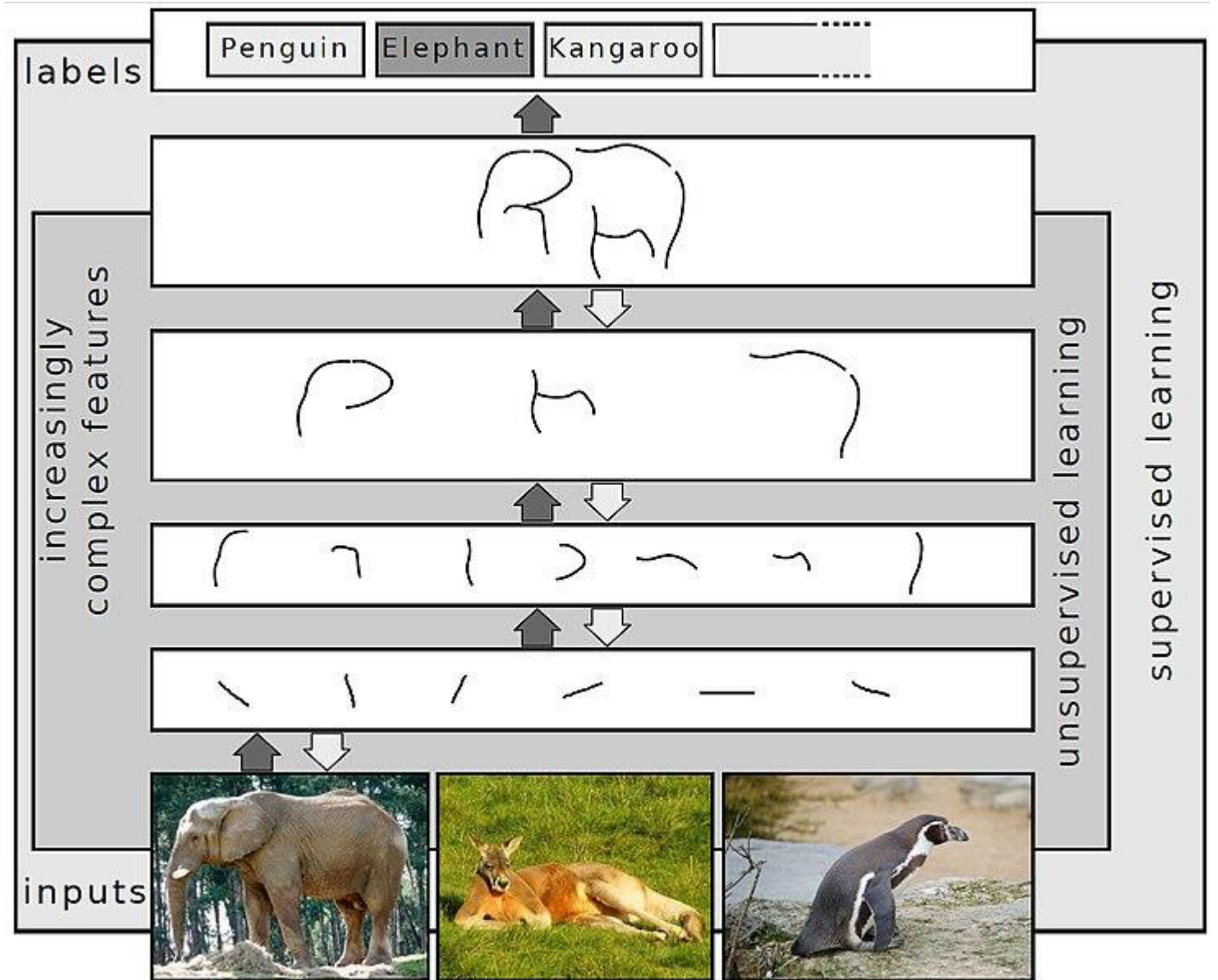


Credits: <https://p1.pxfuel.com/preview/359/465/210/meadow-grass-landscape-agriculture.jpg>

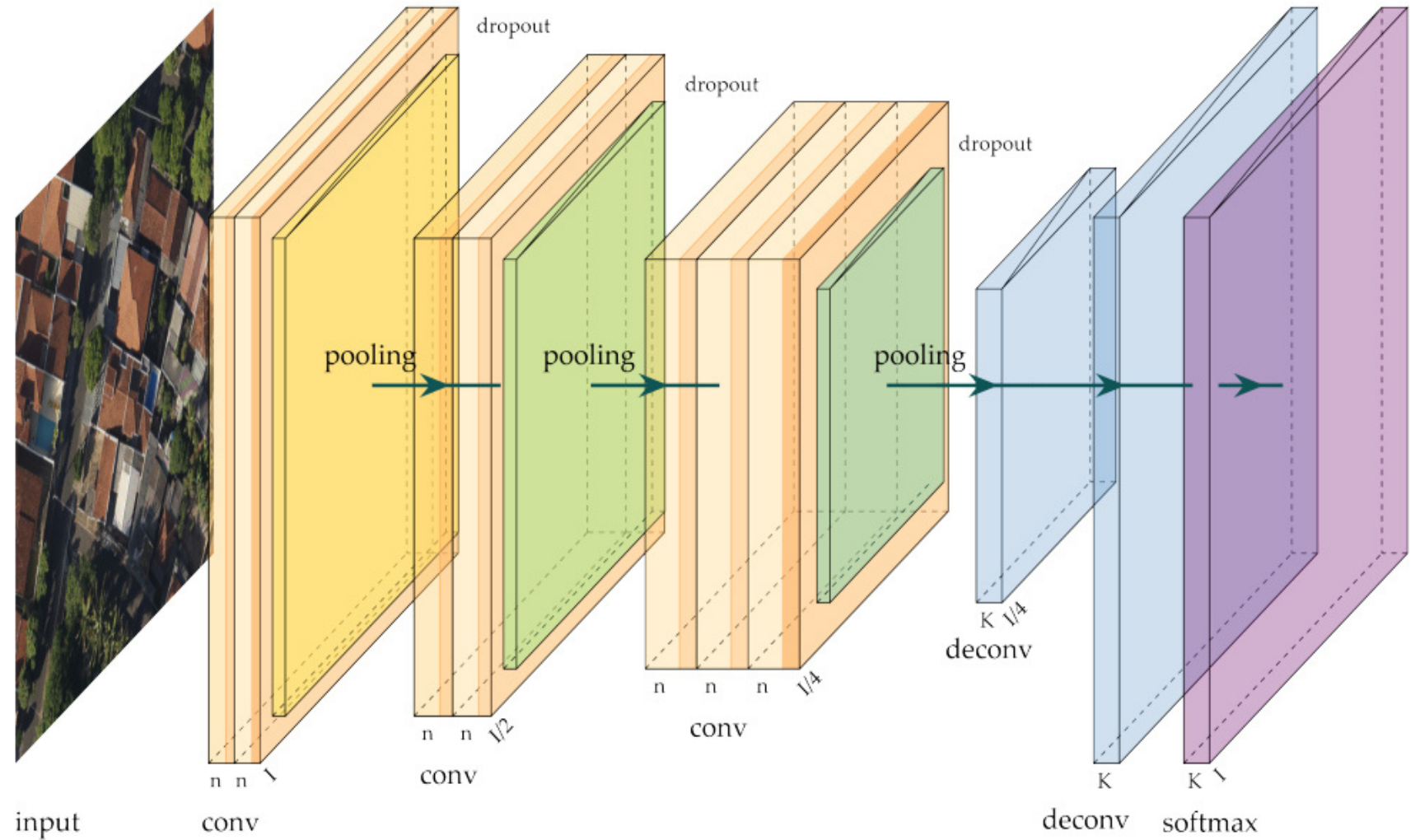


# How does it work?

- Representation learning method
- Use supervised classification to label types
- Extract layers, coarse to fine
- Neurons reassemble, based on fit



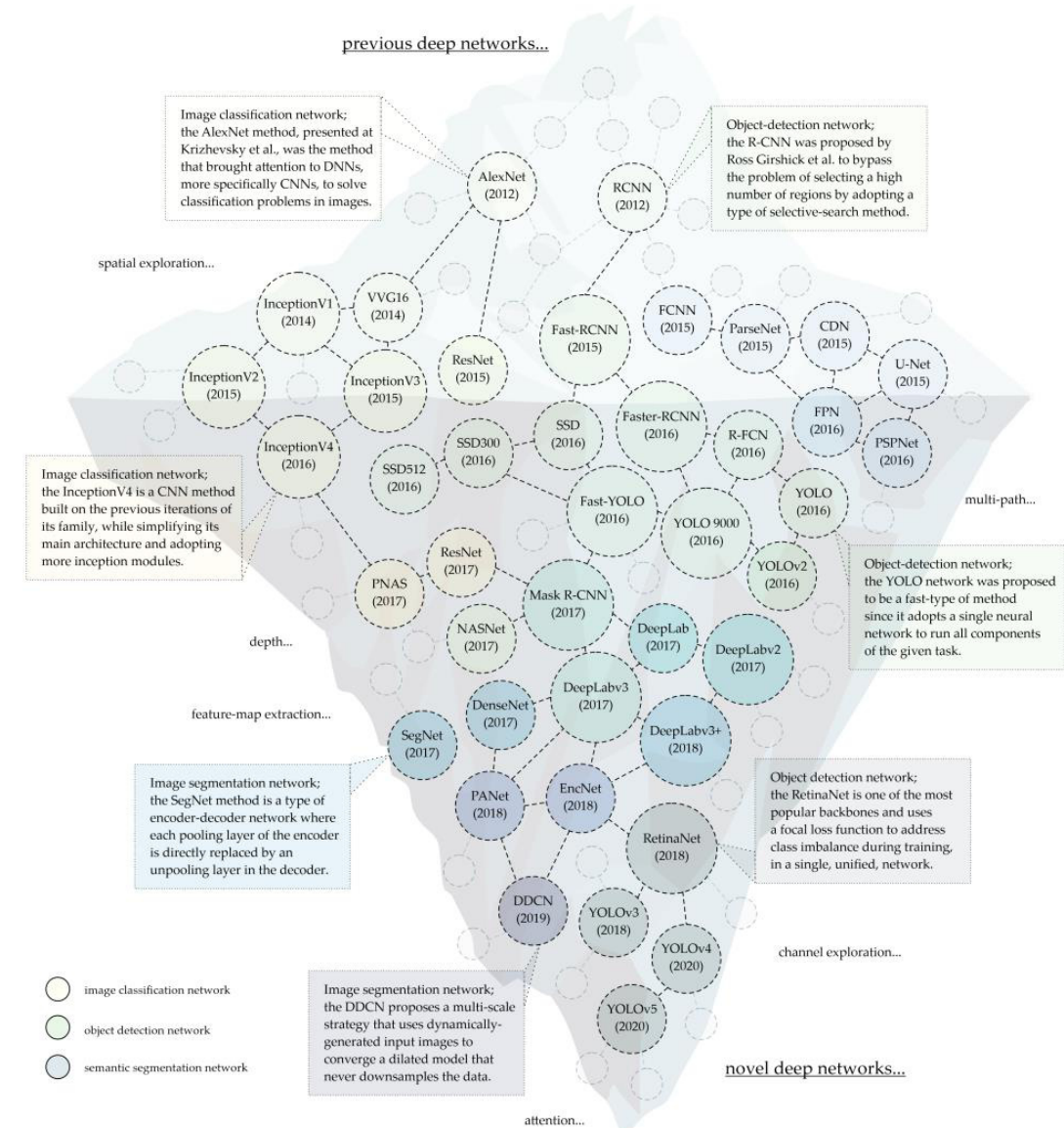
Technically a lot of computing ...



Credits:Osco et al. 2021 <https://arxiv.org/pdf/2101.10861.pdf>

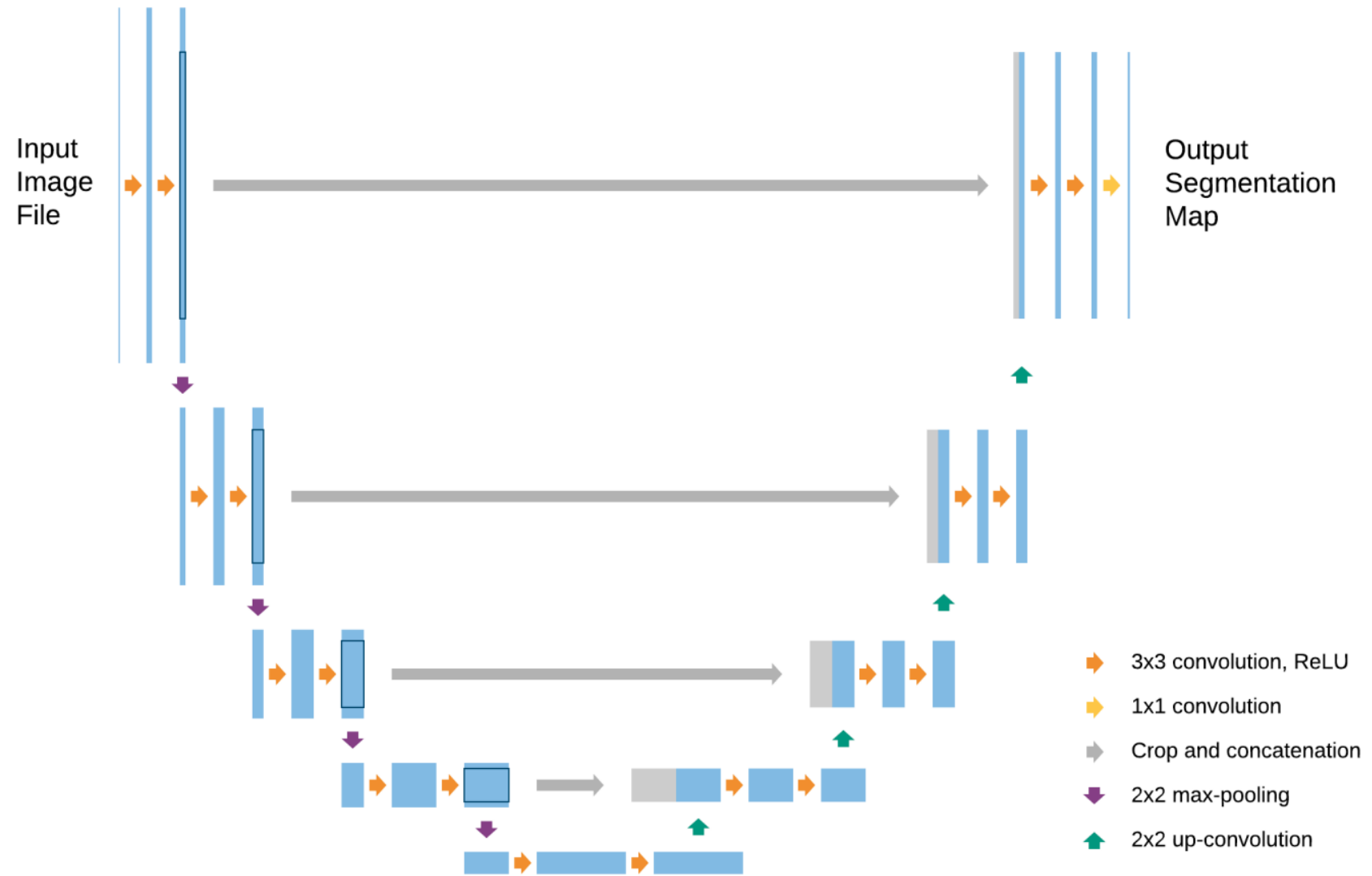
# and many, many frameworks

- Many deep networks exist
- Semantic segmentation is important for object detection in UAV-based imagery
- U-Net, SegNet, DeepLabV3+ are at the forefront of current remote sensing research



Credits:Osco et al. 2021 <https://arxiv.org/pdf/2101.10861.pdf>

# U-Net a robust choice



Credits: Siddique et al. 2020 <https://arxiv.org/pdf/2011.01118.pdf>

See you next time!