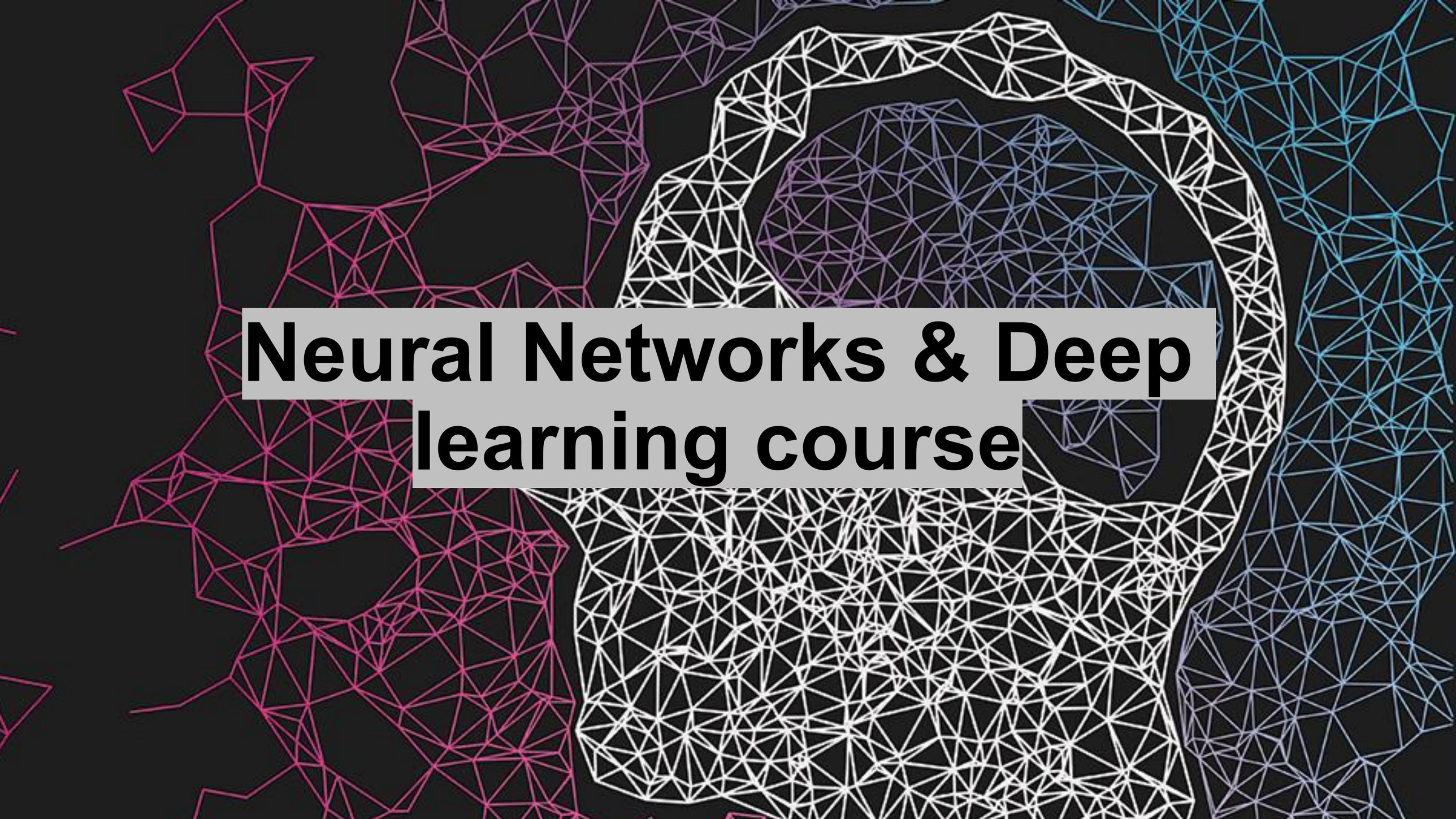
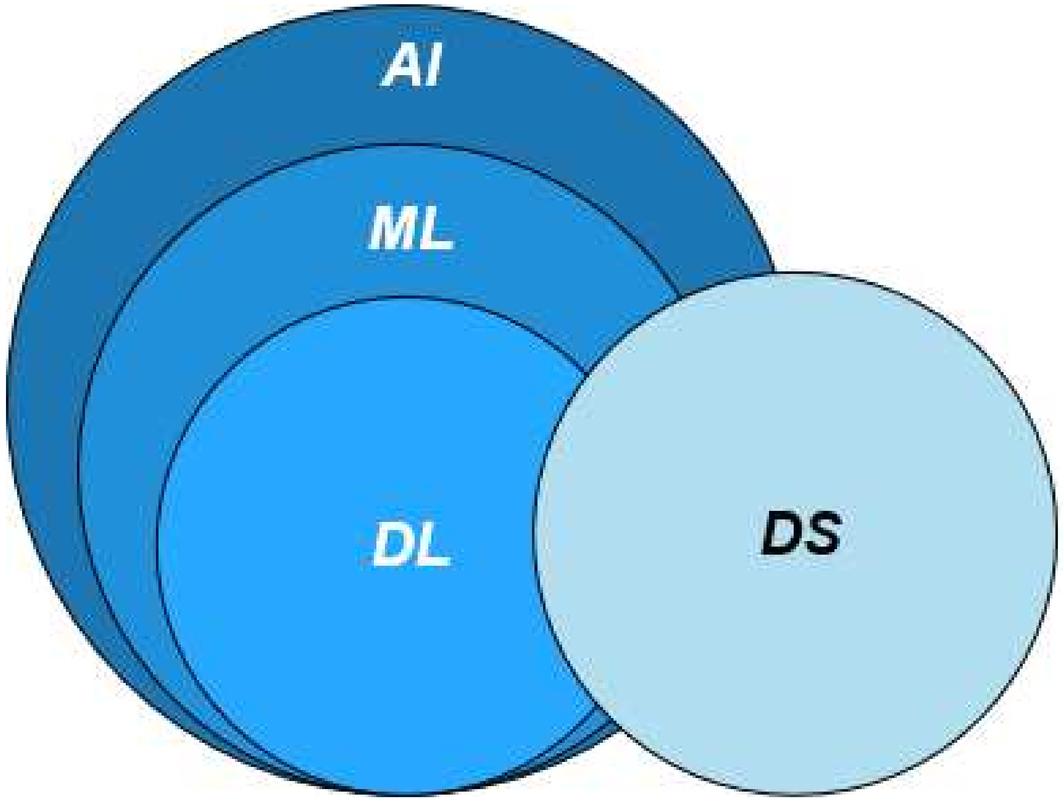

Neural Networks & Deep learning course

What is “deep learning”?

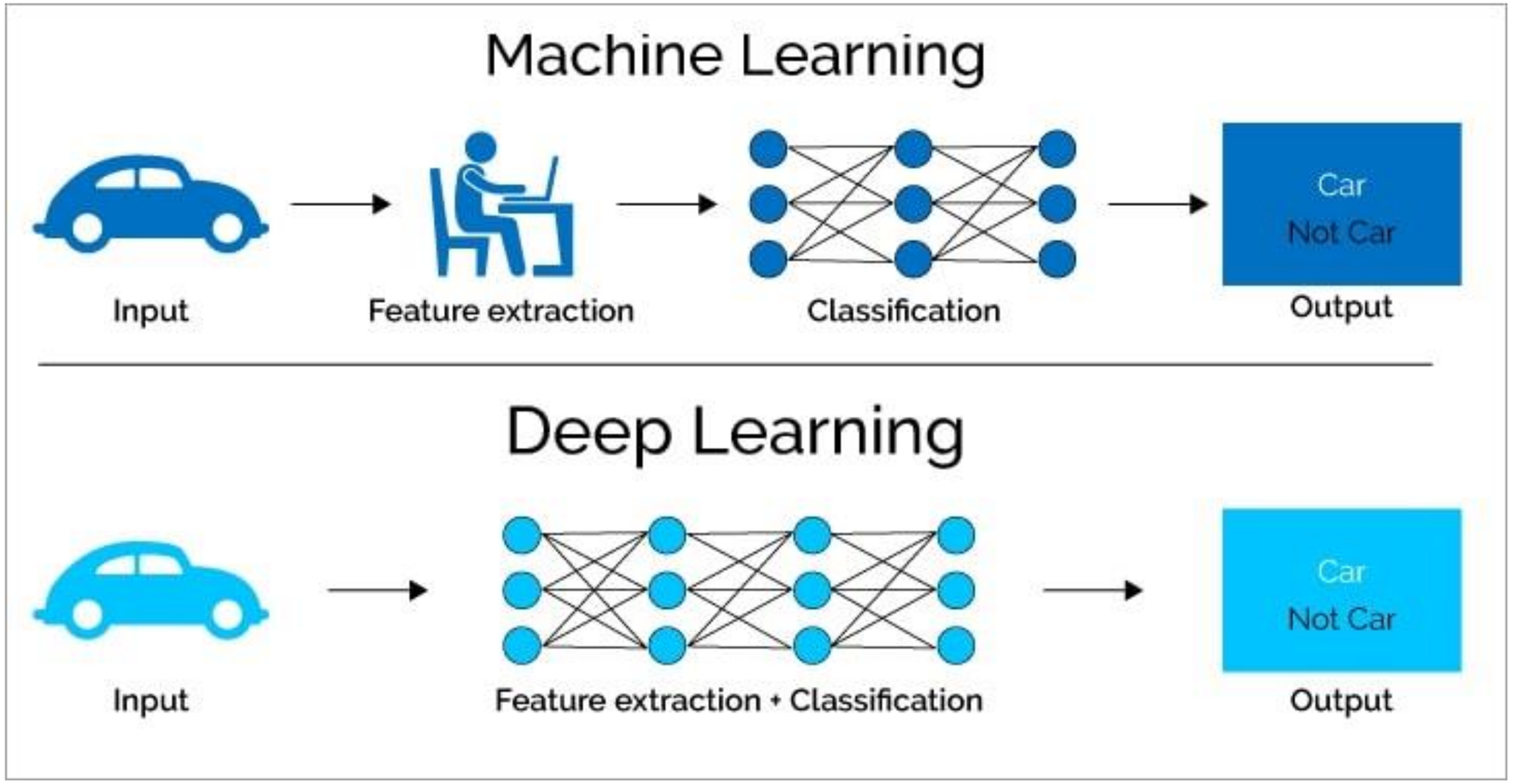
1. **Neural nets**: A class of machine learning architectures that use stacks of linear transformations interleaved with pointwise nonlinearities

2. **Differentiable programming**: A programming paradigm where parameterize parts of the program and let gradient-based optimization tune the parameters

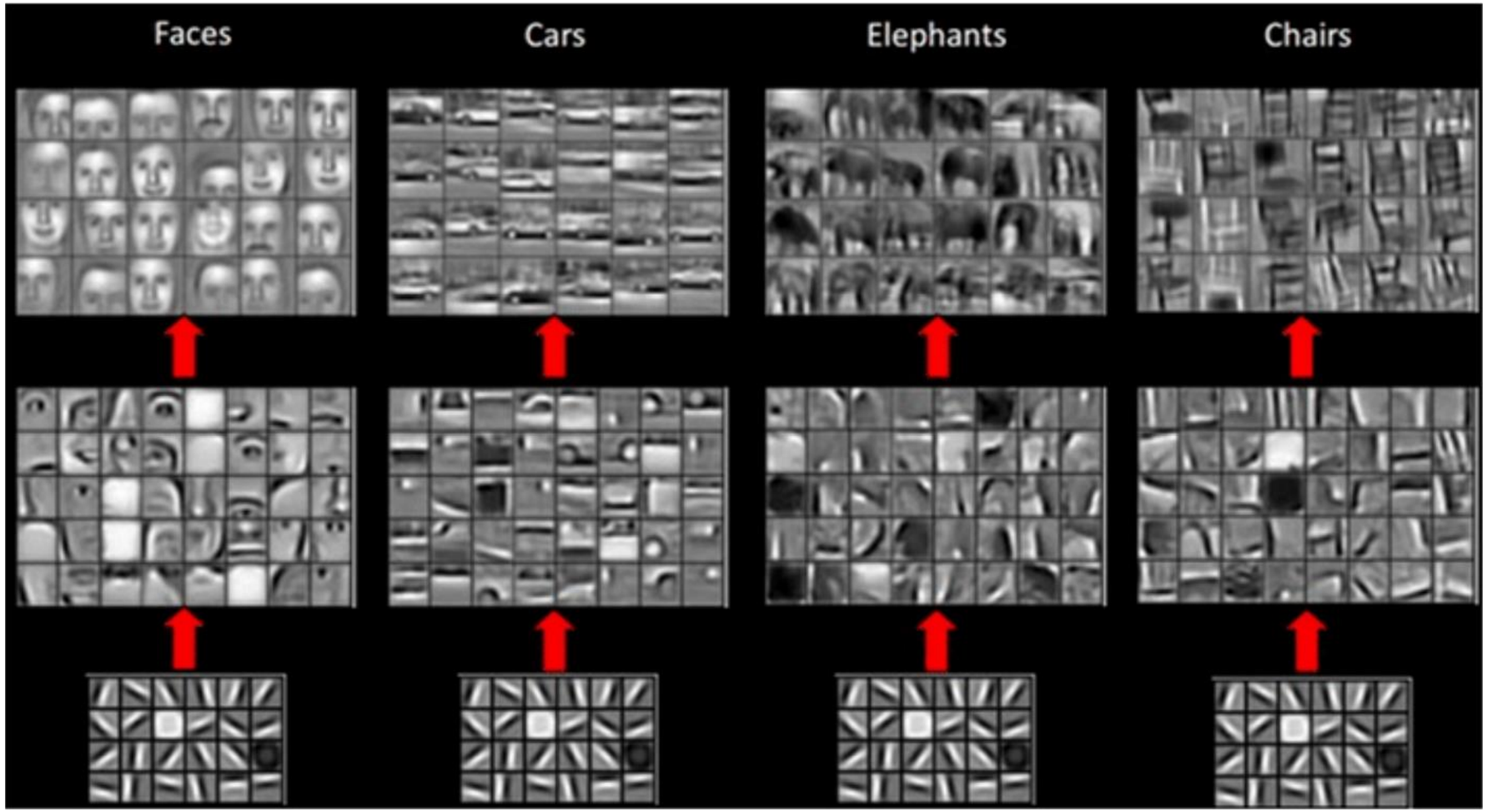
Connection of deep learning with other areas



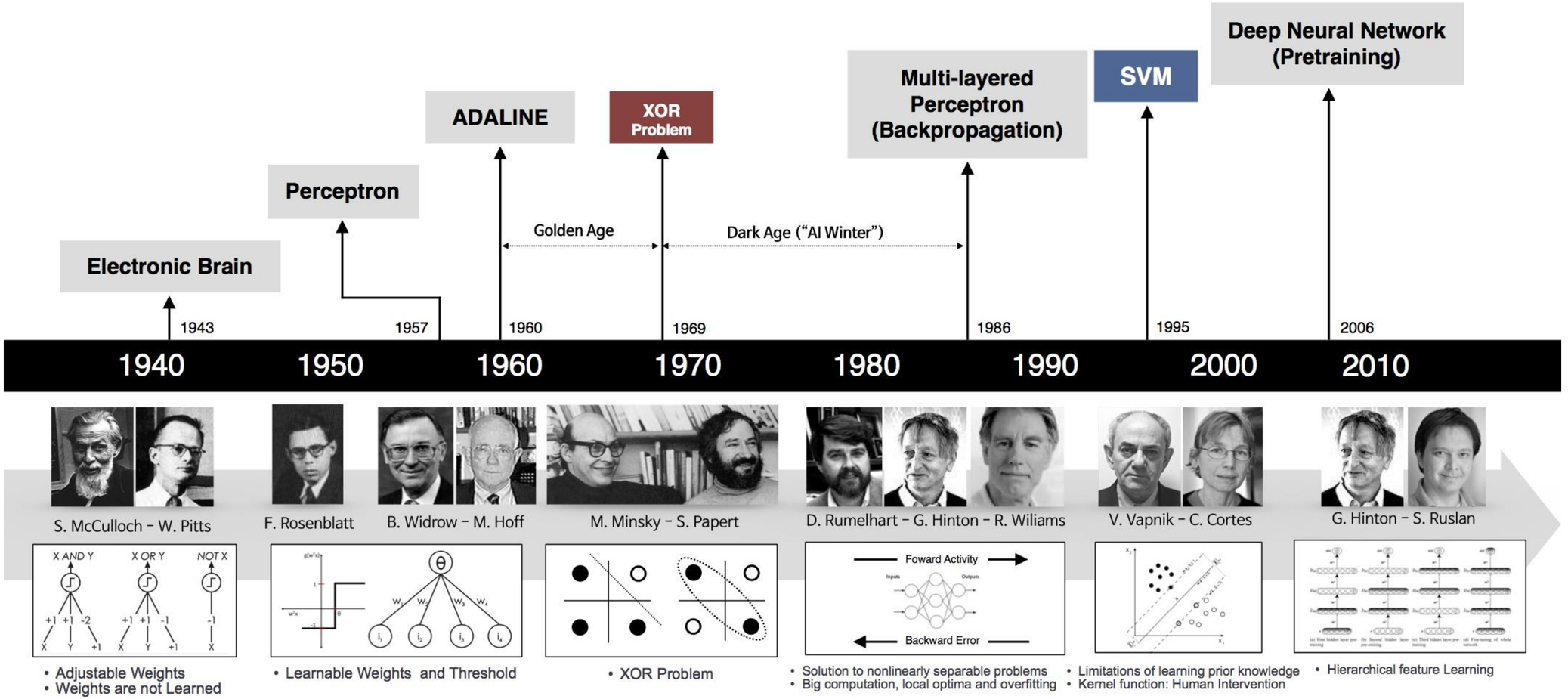
Deep Learning vs Machine Learning



Deep Learning features



Deep Learning timeline



What is deep learning today?

- Autograd (pytorch, tensorflow)
- Billion+ data point datasets
- Parallel training on thousands of GPUs
- Billion+ parameter architectures
- Million+ dollar training costs
- Shockingly good results
- Massive isn’t necessary - e.g. Stable Diffusion
- Open source community and modular reuse