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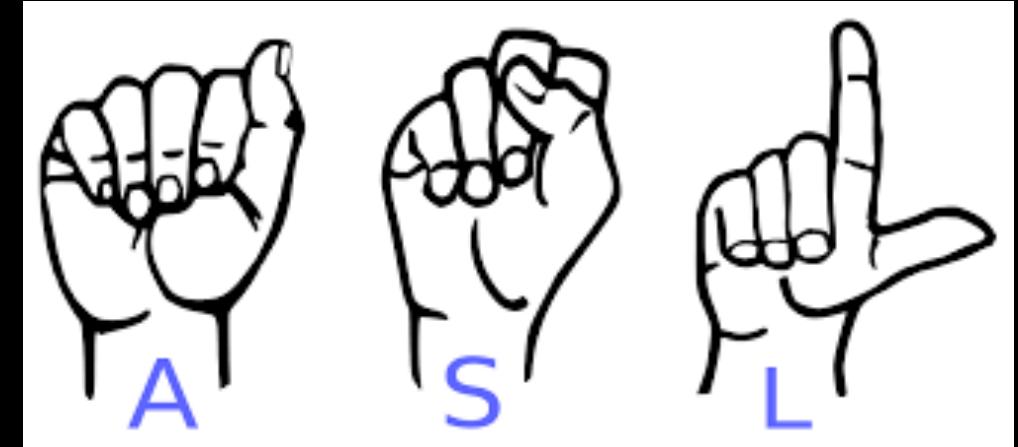
Build an Image Classification Model with PyTorch / September 18th, 2020 / © 2020 IBM Corporation

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Build an Image Classification Model with PyTorch

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Let's get started

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<https://ibm.biz/PyTorchImage>

- Resources & hands-on

<https://ibm.biz/PyTorchResources>



Agenda

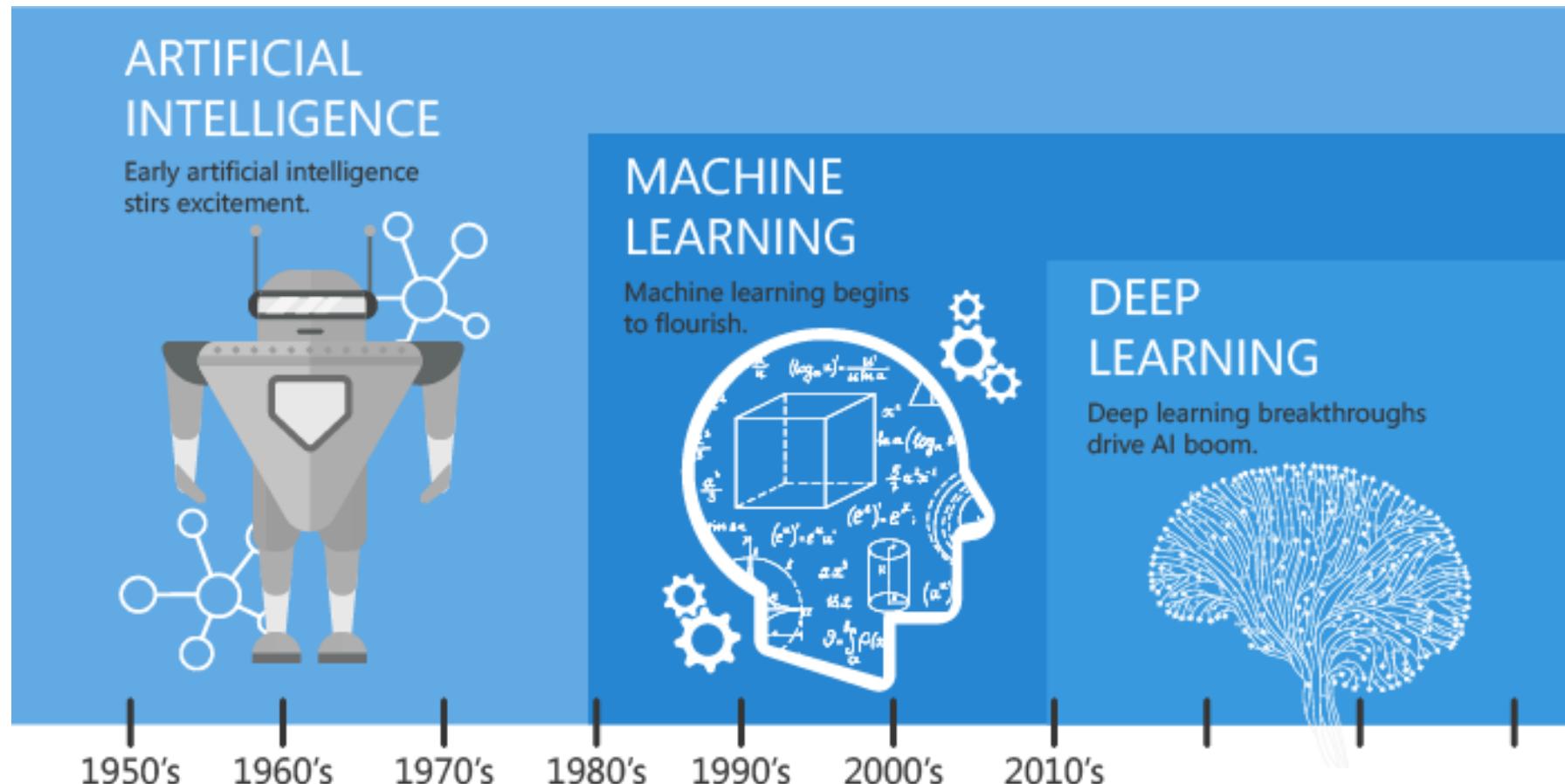
What is Deep Learning?
Applications of Deep Learning

Neural Networks
Convolutional Neural Networks

What is PyTorch?
Why PyTorch?
Pytorch modules

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What is Deep Learning?



Since an early flush of optimism in the 1950's, smaller subsets of artificial intelligence - first machine learning, then deep learning, a subset of machine learning - have created ever larger disruptions.

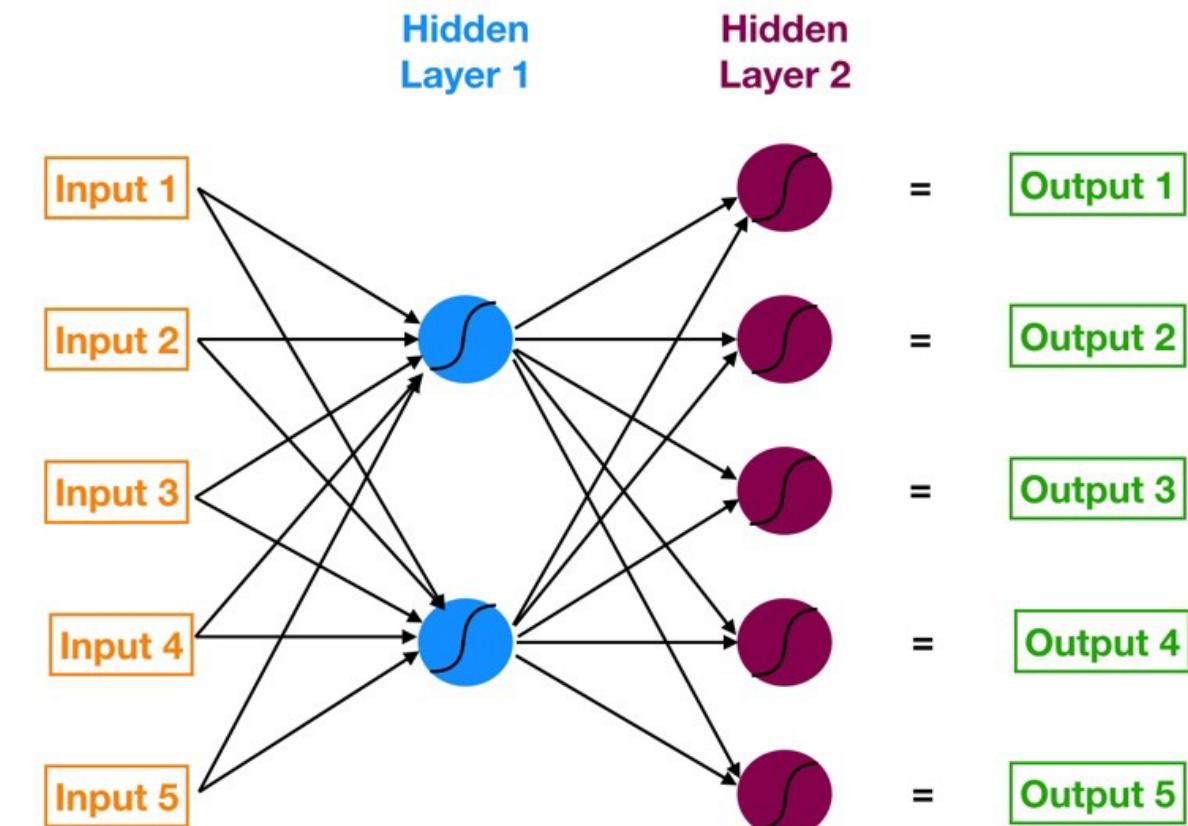
Applications of Deep Learning



Neural Networks

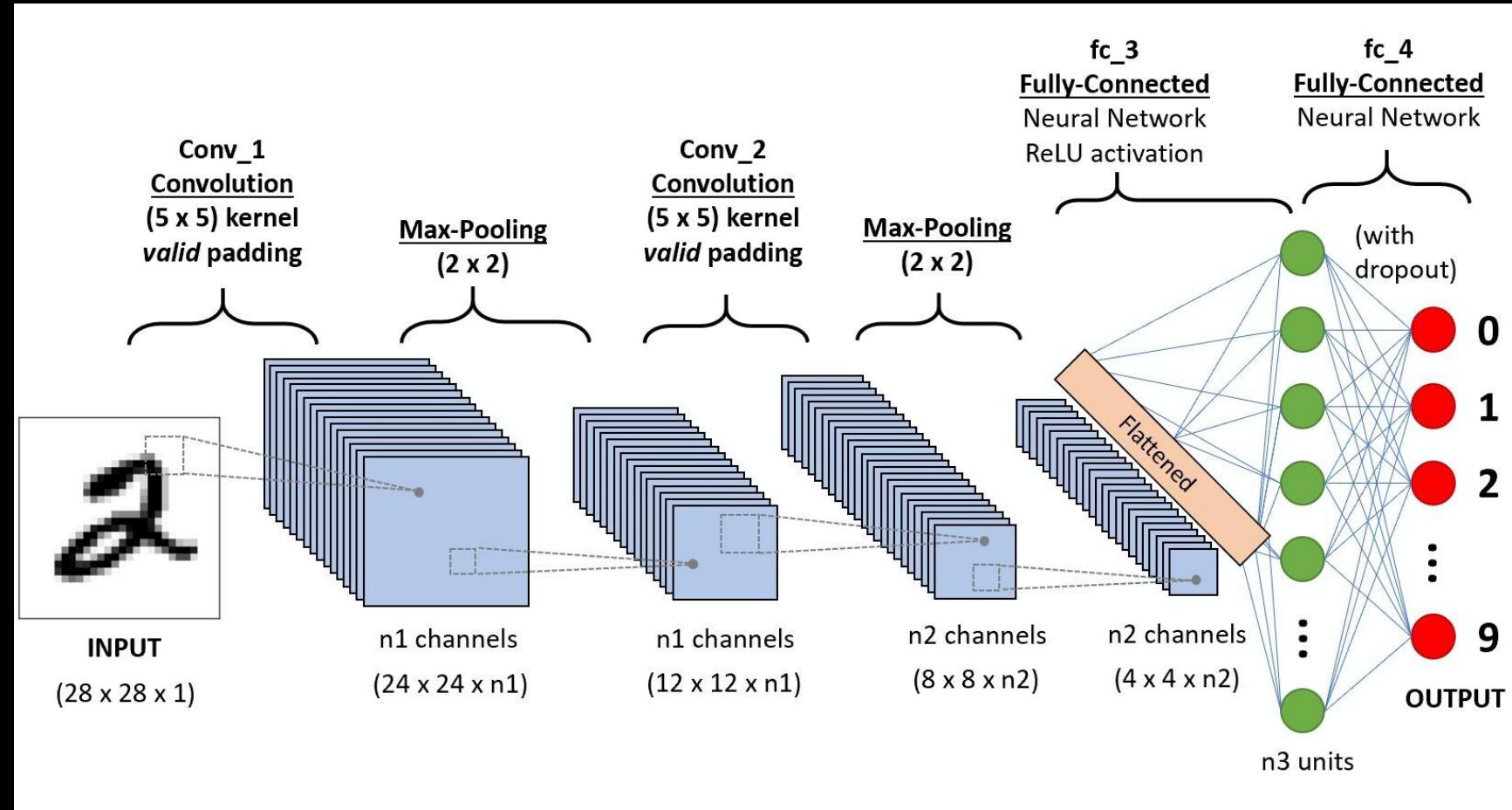
- Multi-layer networks of neurons that we use to classify things, make predictions
- Architecture inspired by the neurons in the brain
- Made up of different layers: input, hidden and output
- Can easily handle time series data or multidimensional data
- The more hidden layers, the more accuracy
- Requires very large amounts of data
- Expensive to train
- “Black box” nature

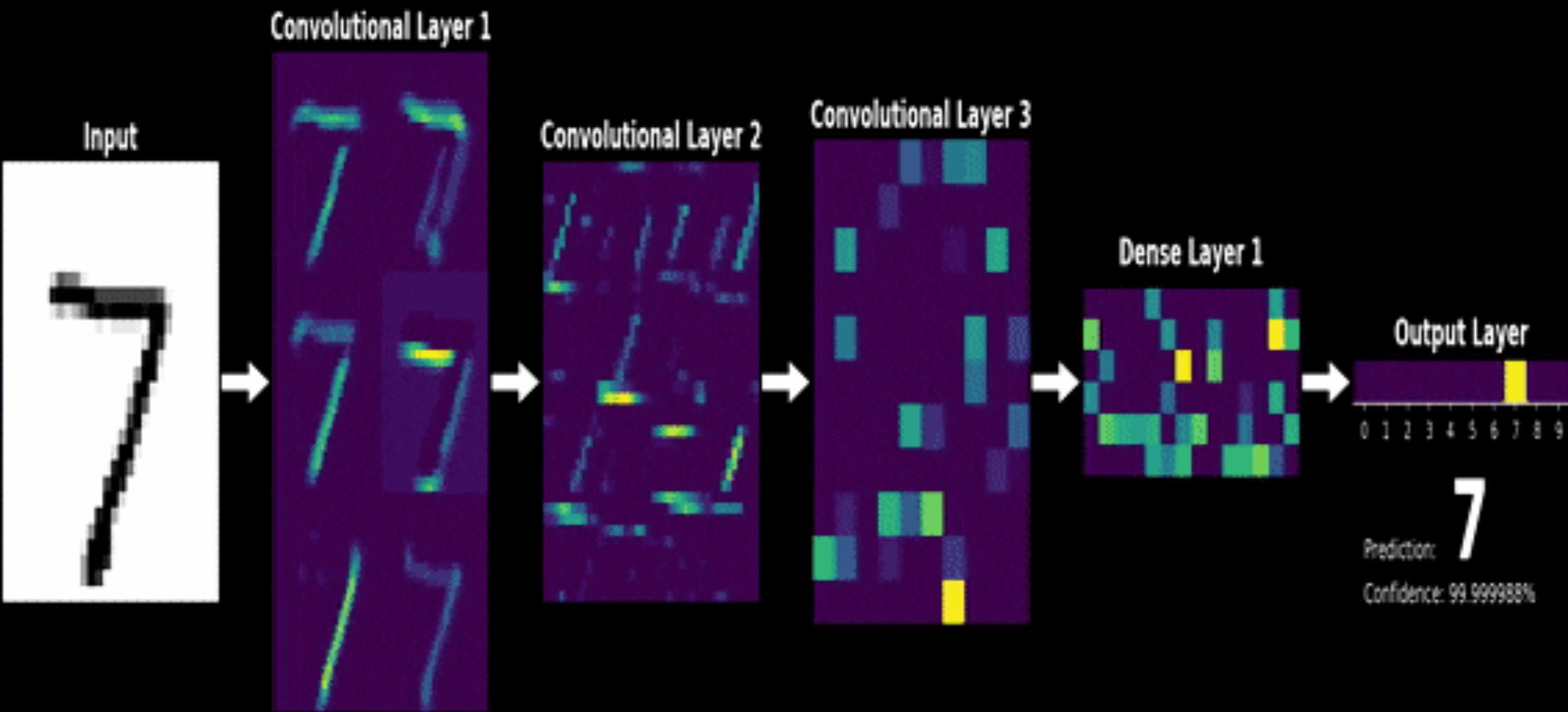
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<https://playground.tensorflow.org/>

Convolutional Neural Networks





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Introduction to PyTorch

- PyTorch is an open source deep learning framework and scientific computing package based on Python
- Tensor computation (like NumPy) with strong GPU acceleration
- Automatic differentiation for building and training neural networks
- Heavily used by tech giants such as Facebook, Twitter, NVIDIA, Uber etc



Why PyTorch?

- Dynamic computational graphs
- Diverse backend support
- Imperative Style
- Highly Extensible
- Python-centric approach

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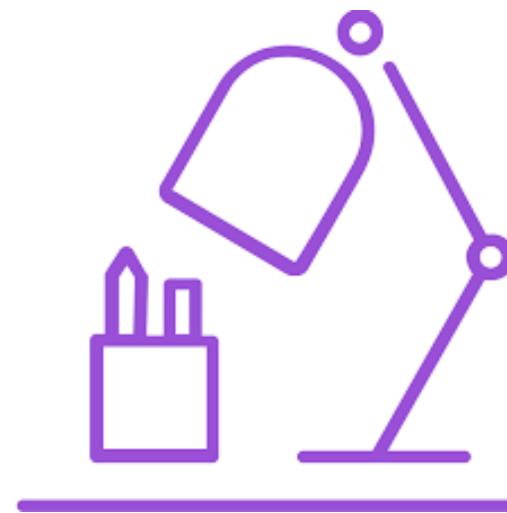
A few PyTorch modules

Package	Description
torch	The top-level PyTorch package and tensor library.
torch.nn	A subpackage that contains modules and extensible classes for building neural networks.
torch.autograd	A subpackage that supports all the differentiable Tensor operations in PyTorch.
torch.nn.functional	A functional interface that contains typical operations used for building neural networks like loss functions, activation functions, and convolution operations.
torch.optim	A subpackage that contains standard optimization operations like SGD and Adam.
torch.utils	A subpackage that contains utility classes like data sets and data loaders that make data preprocessing easier.
torchvision	A package that provides access to popular datasets, model architectures, and image transformations for computer vision.



Hands-on

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Tools & Frameworks for Deep Learning



Useful Links

Learn – develop – connect

IBM Developer developer.ibm.com

PyTorch resources : https://pytorch.org/tutorials/beginner/deep_learning_60min_blitz.html

<https://heartbeat.fritz.ai/introduction-to-pytorch-for-deep-learning-5b437cea90ac>

Meetup Page (<https://www.meetup.com/IBM-Cloud-MEA/>)

Thank you

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