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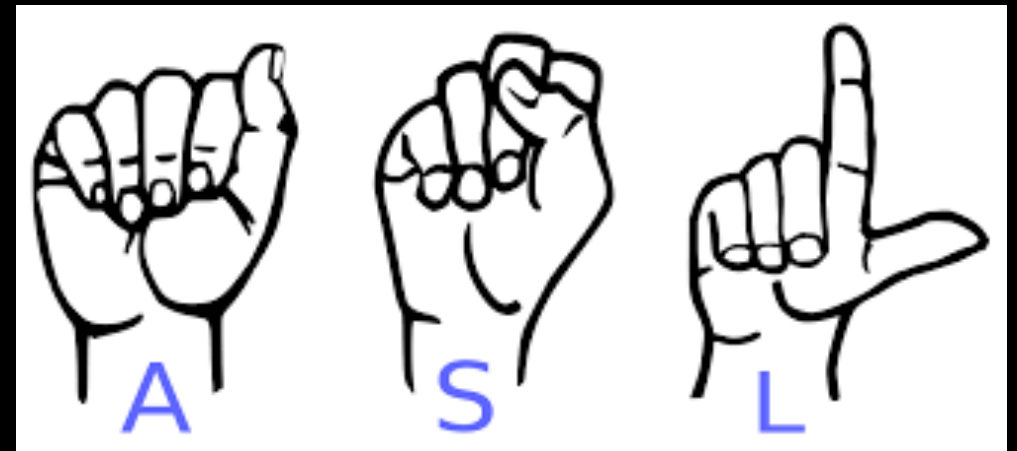
Build an Image Classification Model with PyTorch

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Let's get started

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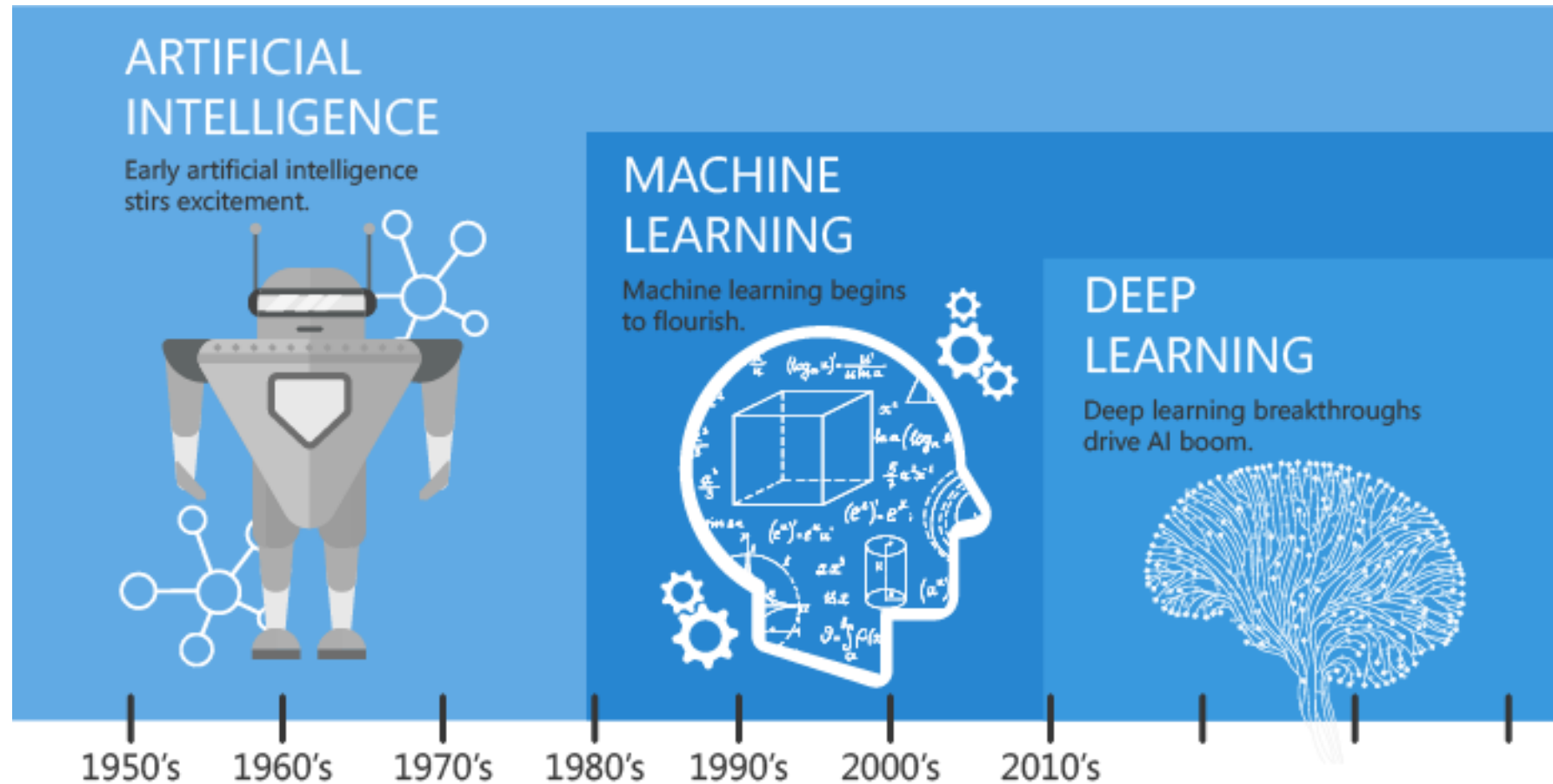
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What is **Deep Learning**?

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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.

Retrieved from <https://towardsdatascience.com/artificial-intelligence-vs-machine-learning-vs-deep-learning-2210ba8cc4ac>



Applications of Deep Learning

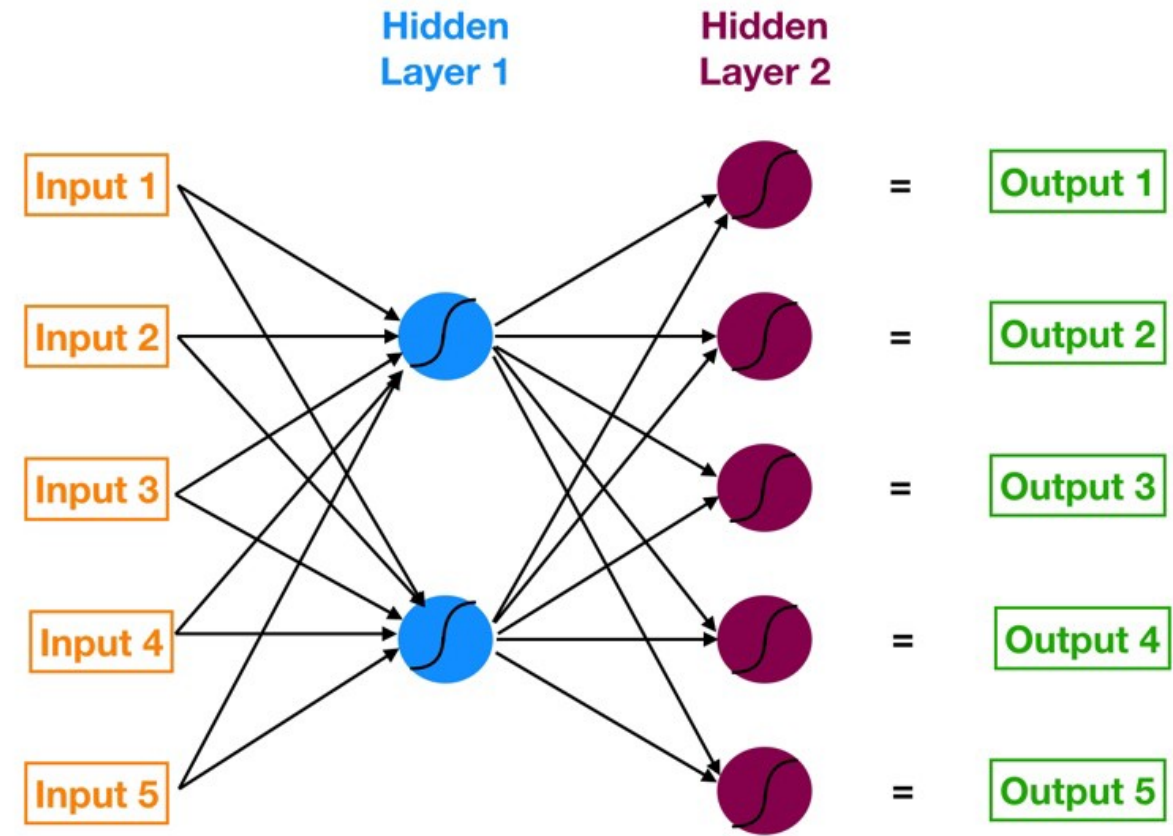


Retrieved from <https://www.houseofbots.com/news-detail/11881-1-here-are-some-amazing-deep-learning-applications>

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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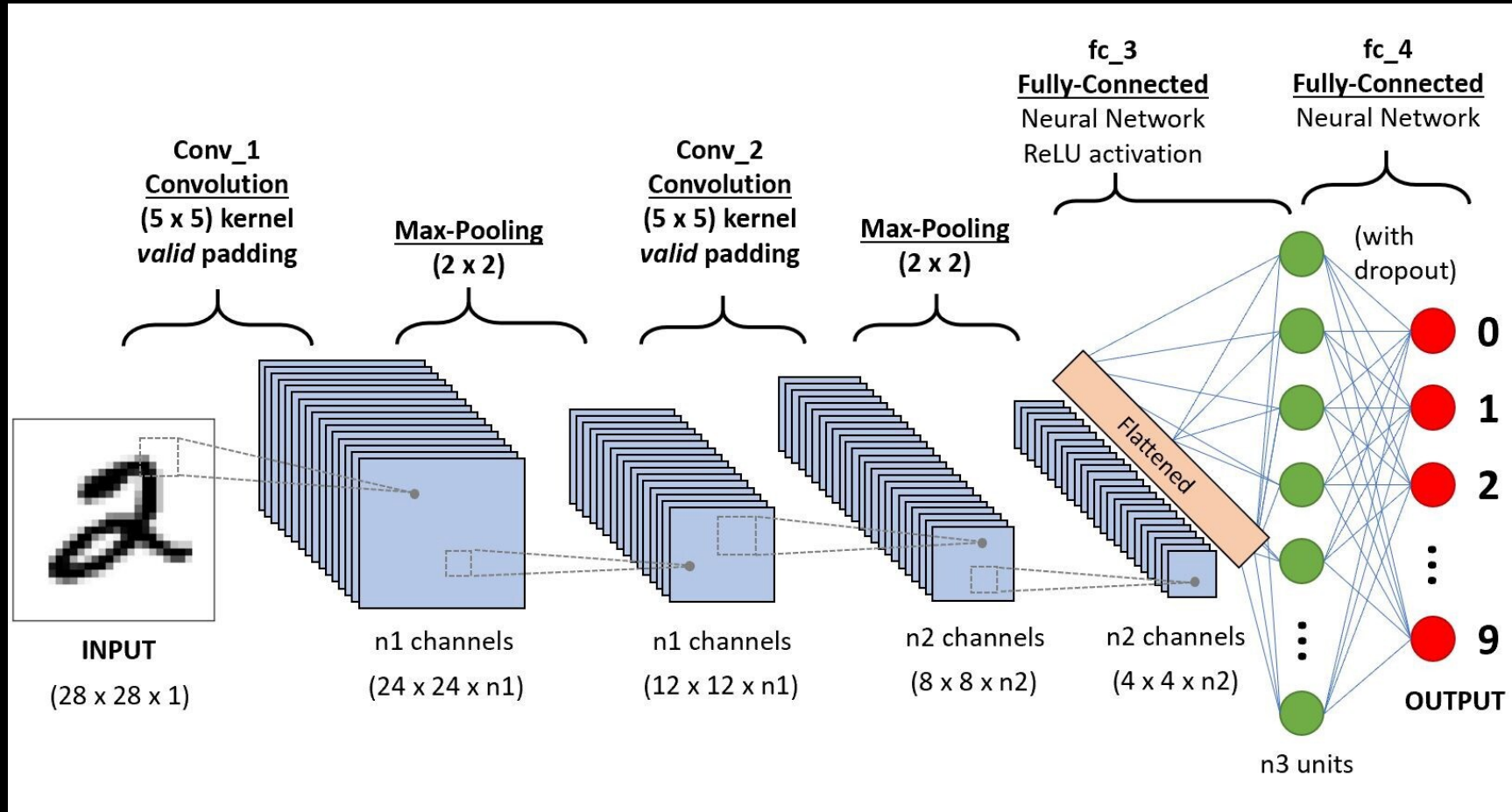


Retrieved from <https://towardsdatascience.com/understanding-neural-networks-19020b758230>

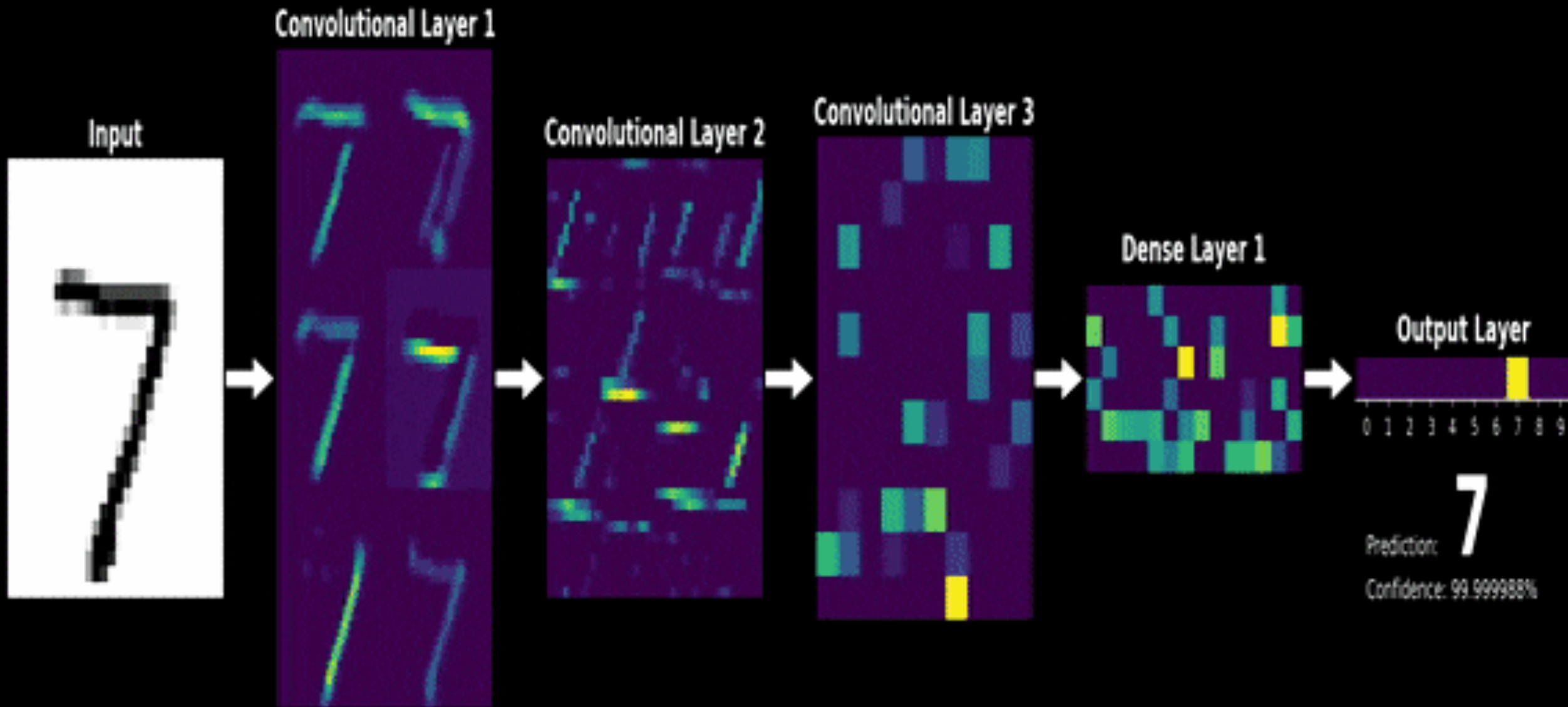
<https://playground.tensorflow.org/>



Convolutional Neural Networks



Retrieved from <https://towardsdatascience.com/a-comprehensive-guide-to-convolutional-neural-networks-the-eli5-way-3bd2b1164a53>



Retrieved from <https://gfycat.com/affectionatememorablegreyhounddog-artificial-intelligence-neural-networks>

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



A few **PyTorch** modules

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

Hands-On

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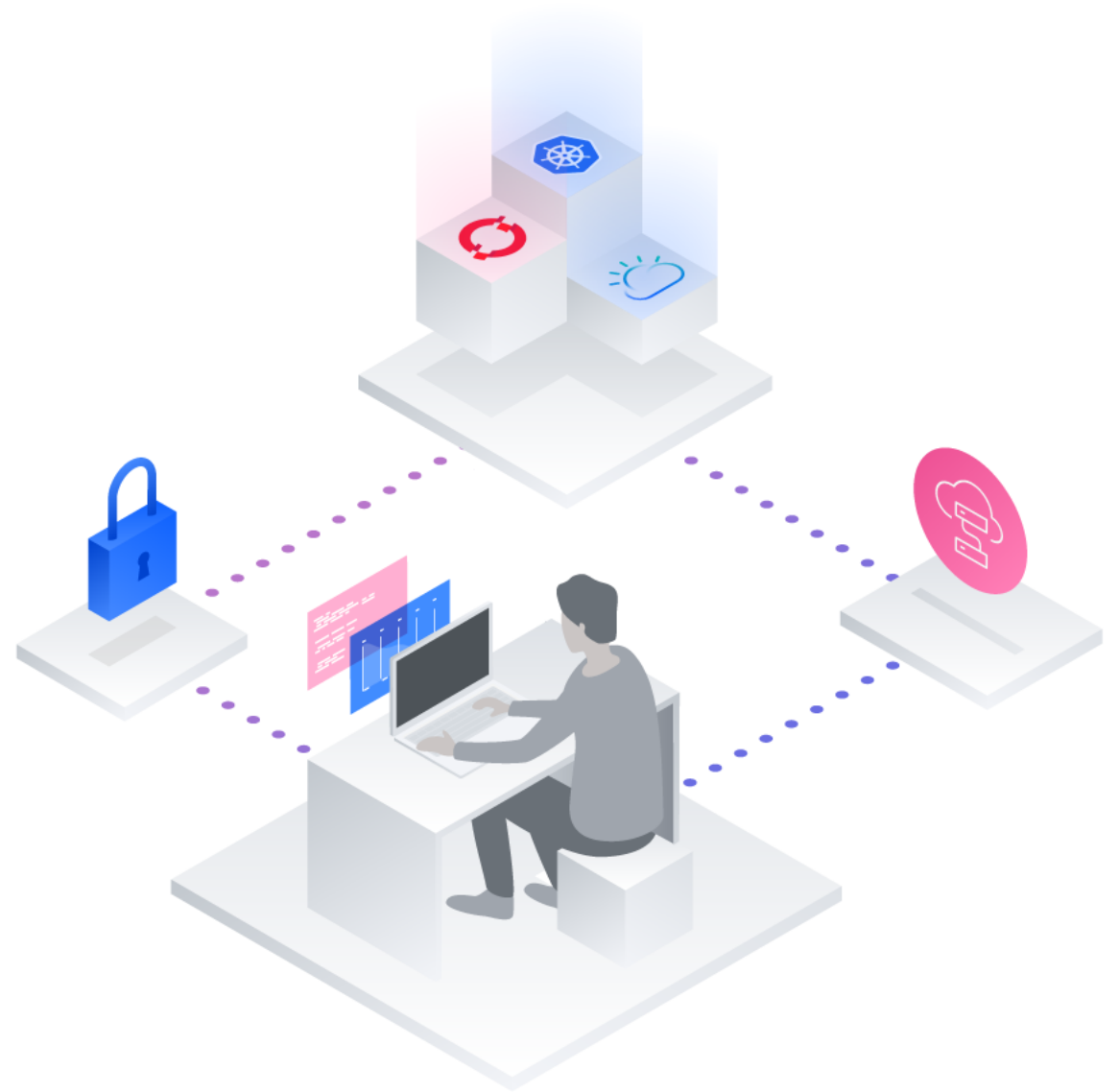
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Learn – develop – connect

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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