Lab 05

"Artificial Intelligence" Course

Hamed Hemati, Joëlle Hanna - 06.05.2024

Objectives

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- Prepare and load the "Fashion MNIST" dataset in PyTorch.
- Implement a Multilayer Perceptron (MLP).
- Train and test a neural network.

What do we want to predict?

Dataset:

by *Zalando*

Fashion Products

10 Categories

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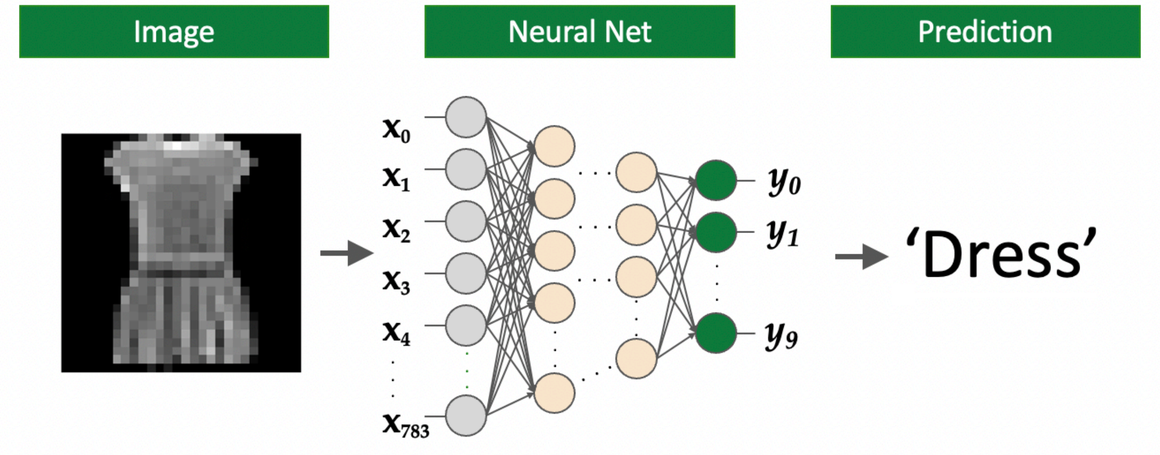

Loading Data

There are three possibilities to use the data to train the model:

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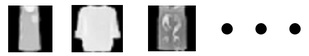

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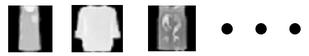

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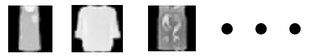

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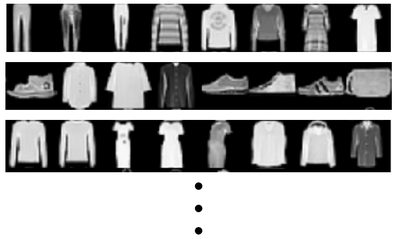

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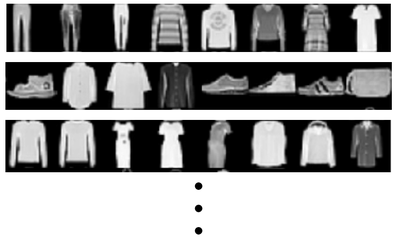

The SGD "Recipe" for Training a Model

For each **epoch**:

For each **mini-batch**:

$x, y =$ mini-batch

$\hat{y} = f_\theta(x)$

$$\mathscr{L} = -\frac{1}{n}\sum_{i=1}^{n} y_i \log \hat{y}_i$$

$$g = \frac{\partial \mathscr{L}}{\partial \theta}$$

$$\theta^{(new)} \leftarrow \theta - \alpha \,.\, g$$

End

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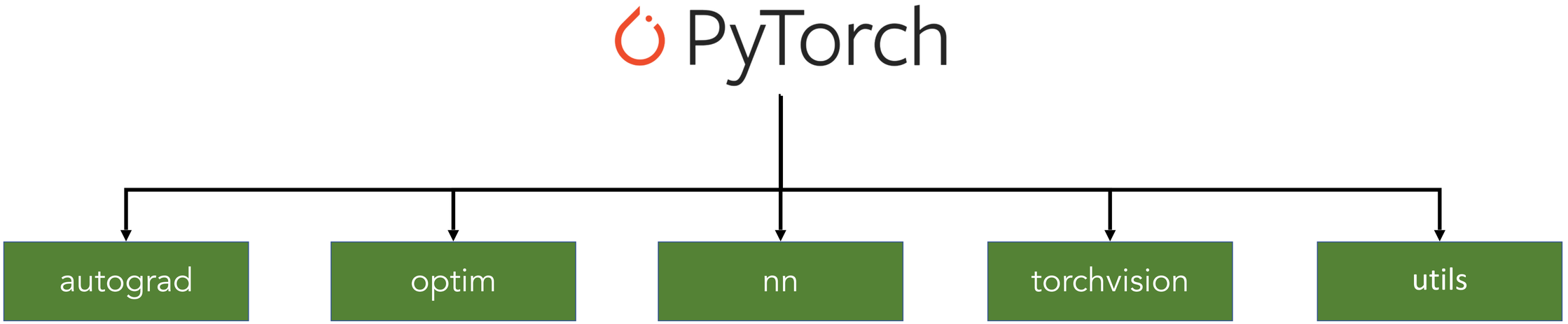
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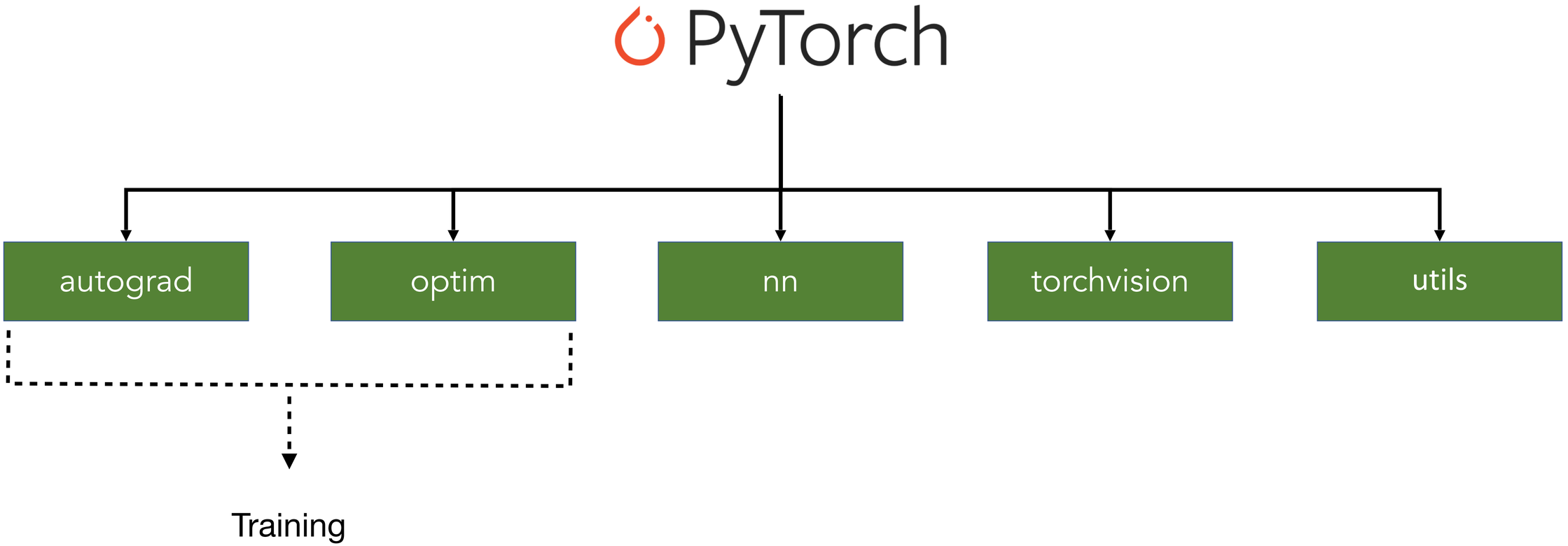
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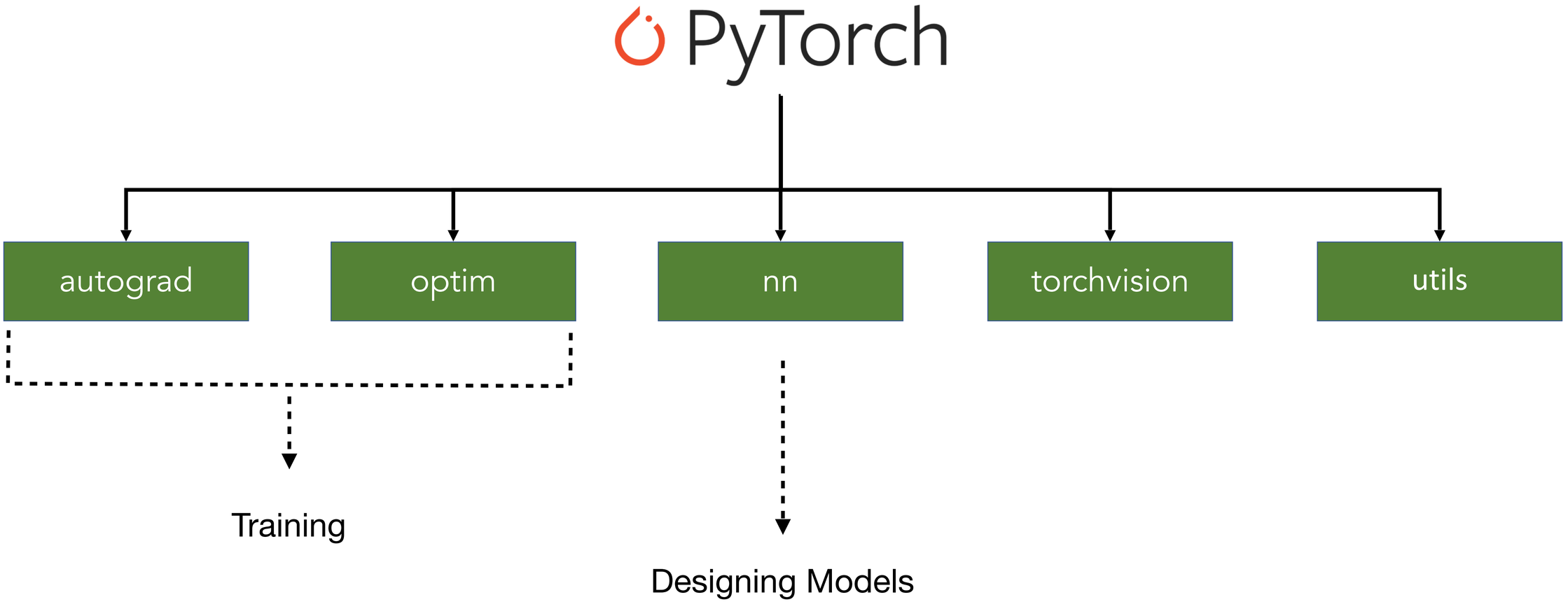
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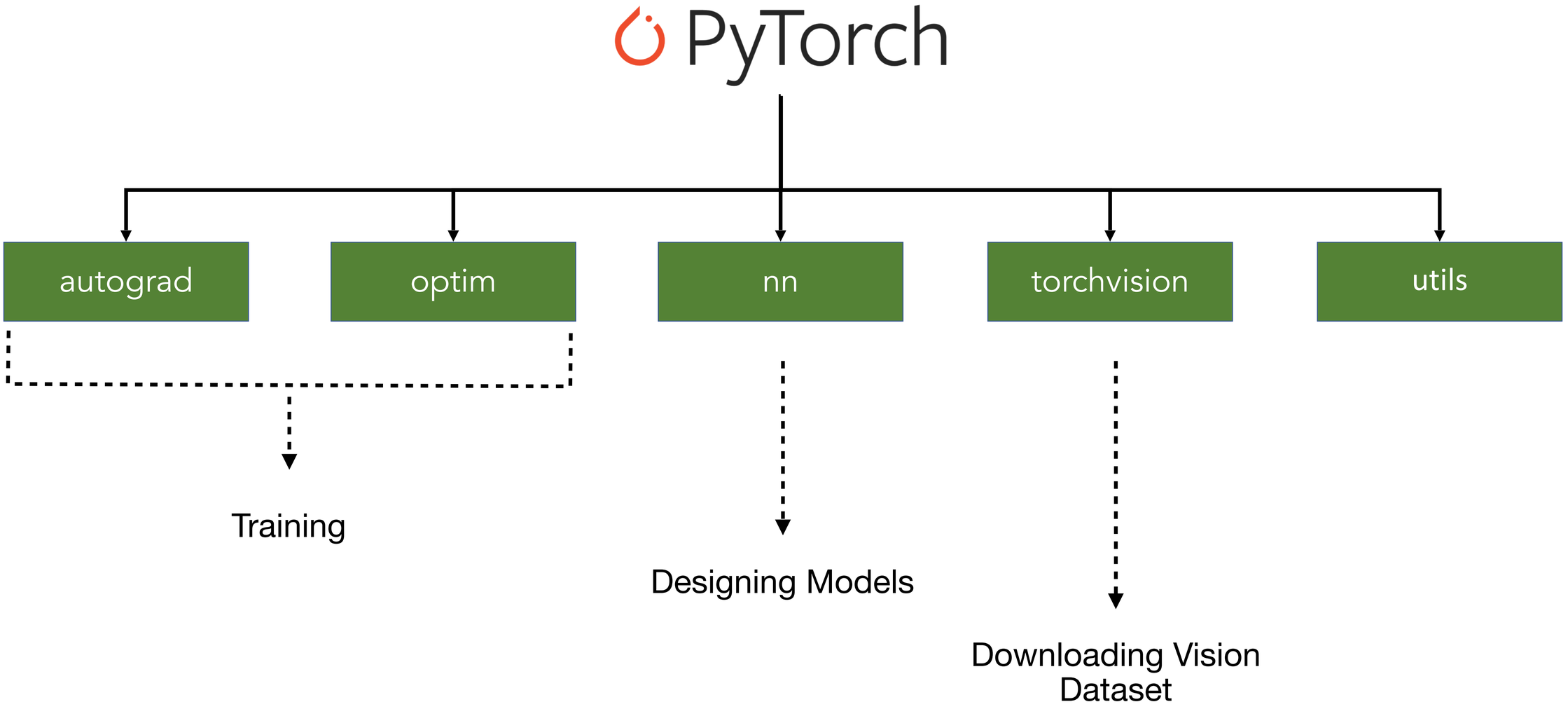
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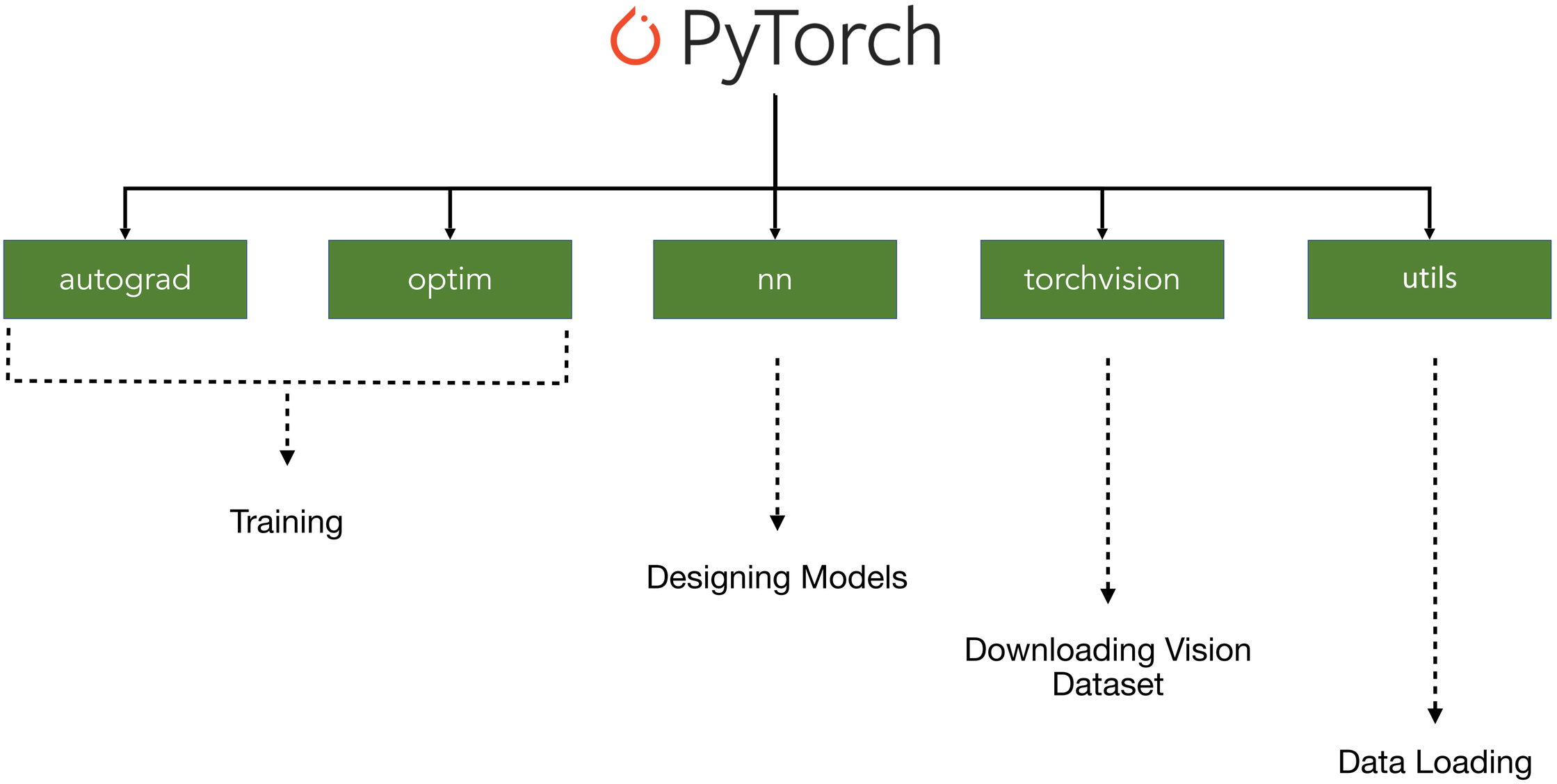
Downloading Vision Dataset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