Deep Neural Networks

Janghun Jo
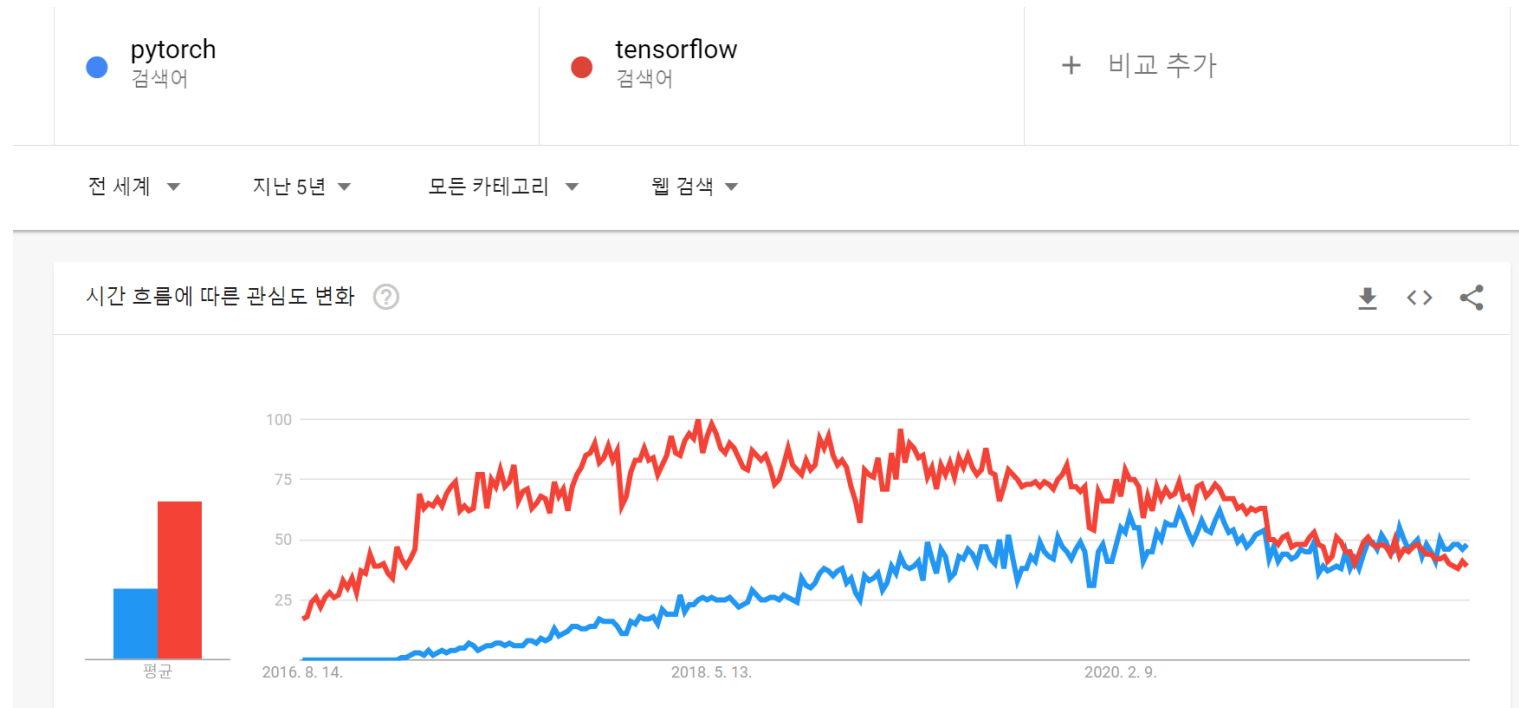
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POSTECH

- Deep Learning Library
- Open Source
- Primarily developed by Facebook's AI
- From September 2016
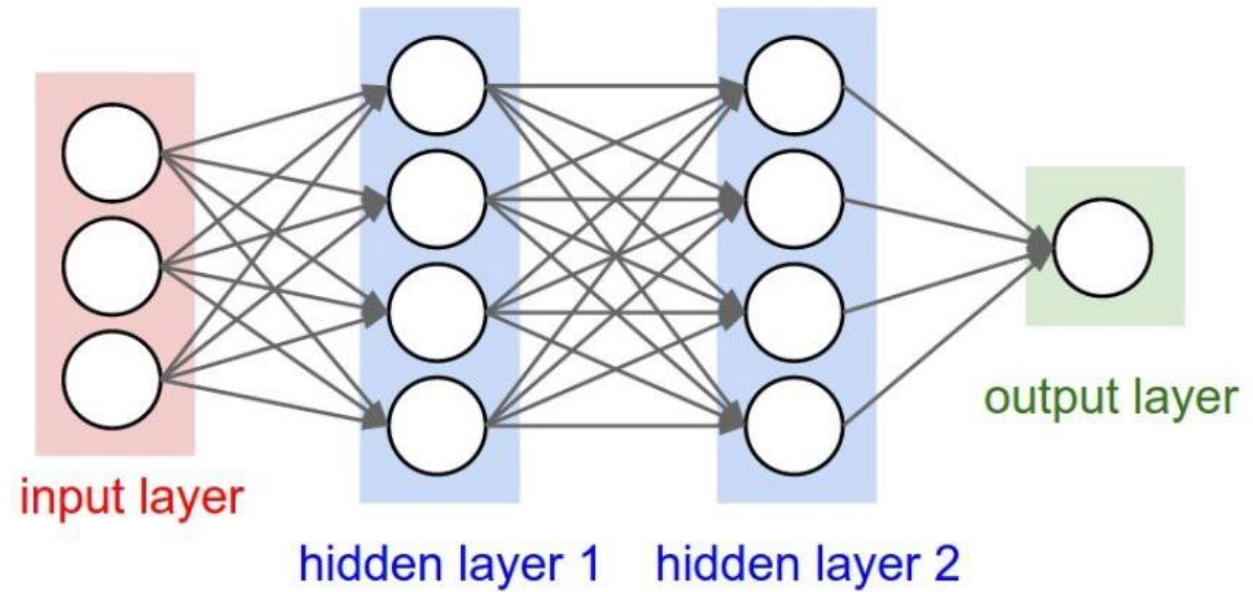- Neural Network 학습에 필요한 전반적인 기능을 제공

Model Training

- Load dataset
- Training

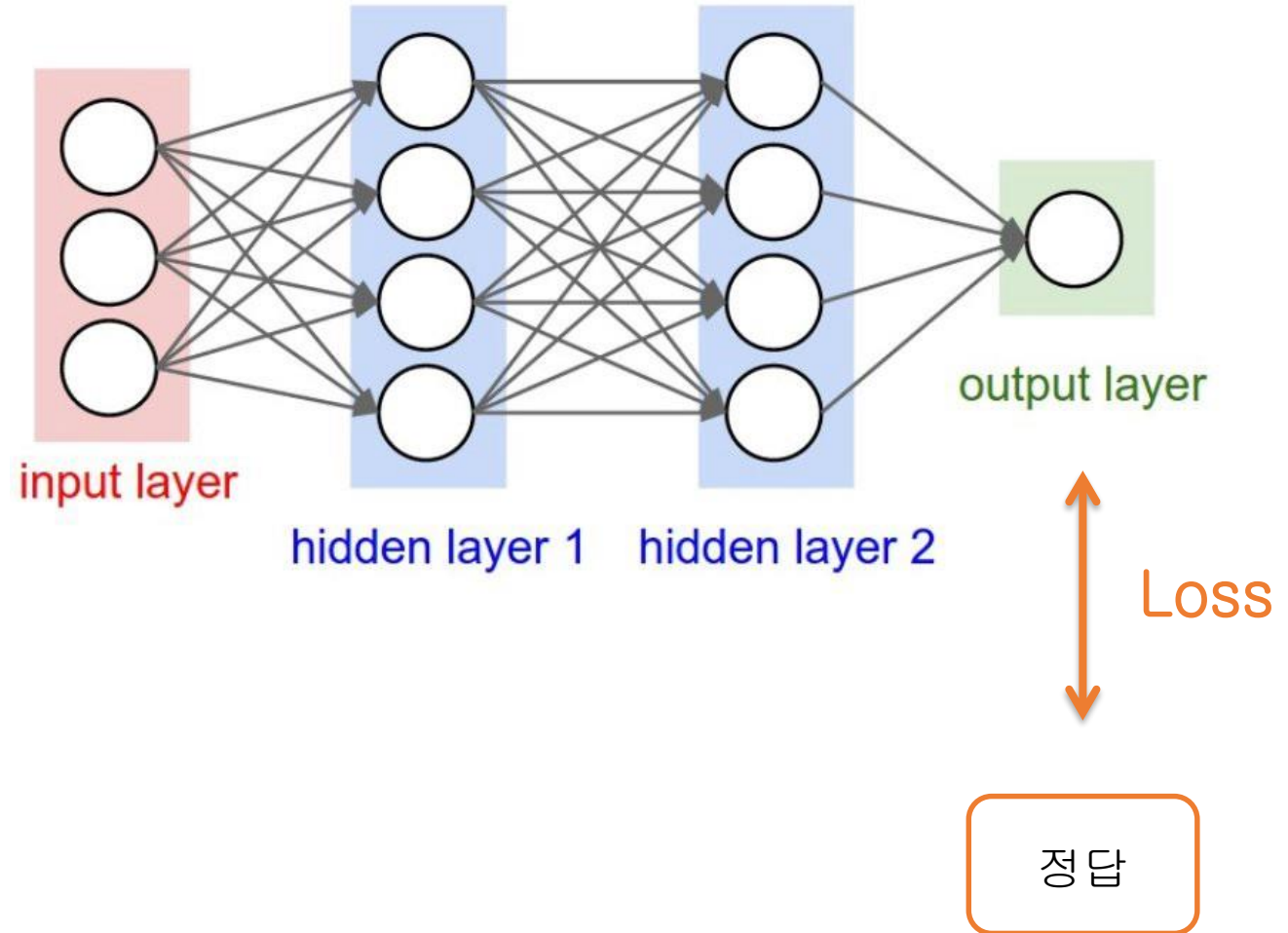   1. Inference
    2. Loss
    3. Gradient
    4. Update

input layer

hidden layer 1   hidden layer 2

output layer

Model Training

- Load dataset
- Training

  1. Inference
  2. Loss
  3. Gradient
  4. Update

input layer

hidden layer 1   hidden layer 2

output layer

Loss

정답

Model Training

- Load dataset
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  1. Inference
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  3. Gradient
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input layer

hidden layer 1   hidden layer 2

output layer

$$\nabla f_\theta(x)$$

Backpropagation

Loss

정답

Model Training

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1. Inference
2. Loss
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input layer

hidden layer 1   hidden layer 2

output layer

Loss

$$\theta \leftarrow \theta - \nabla f_\theta(x)$$

정답
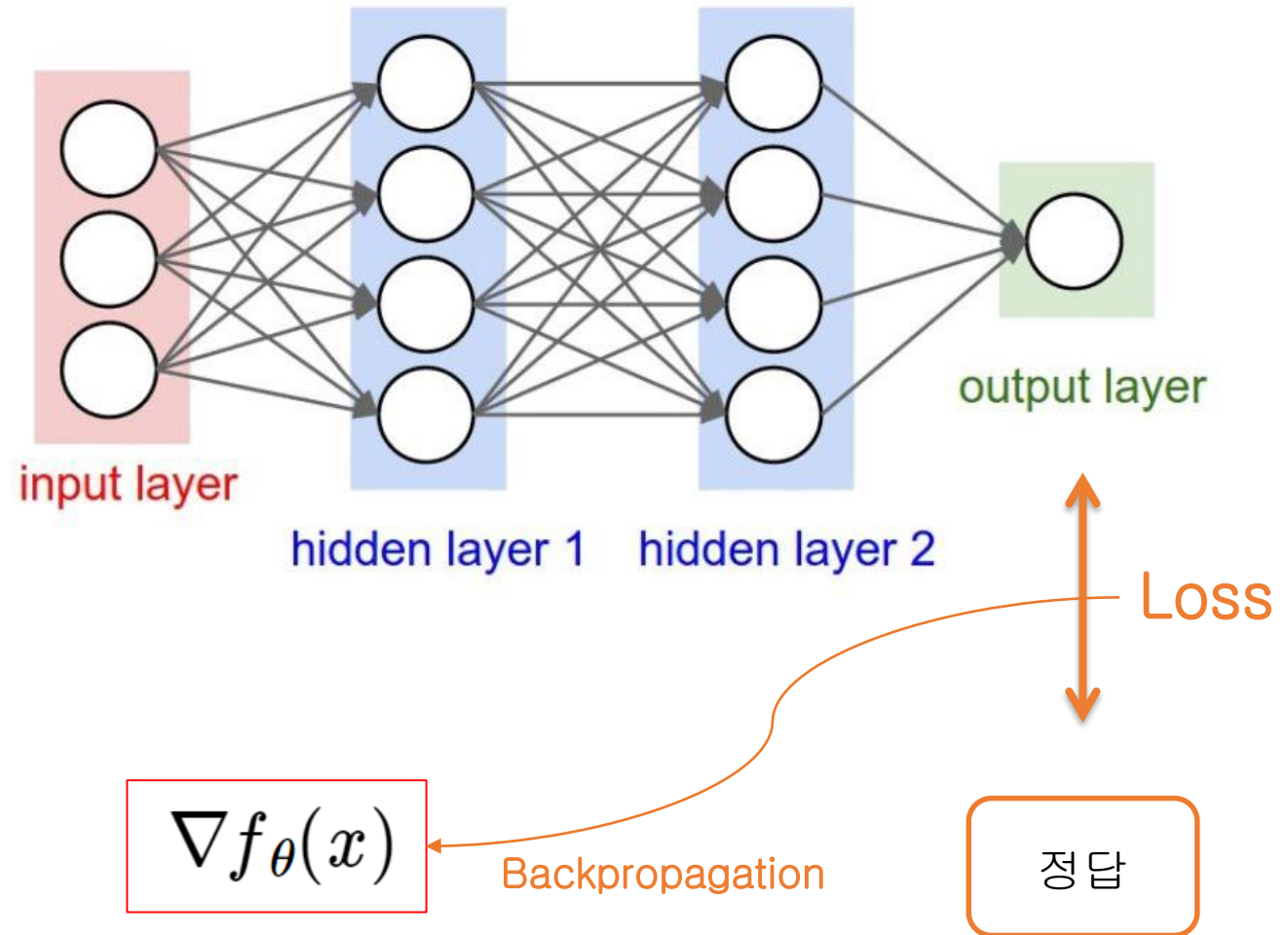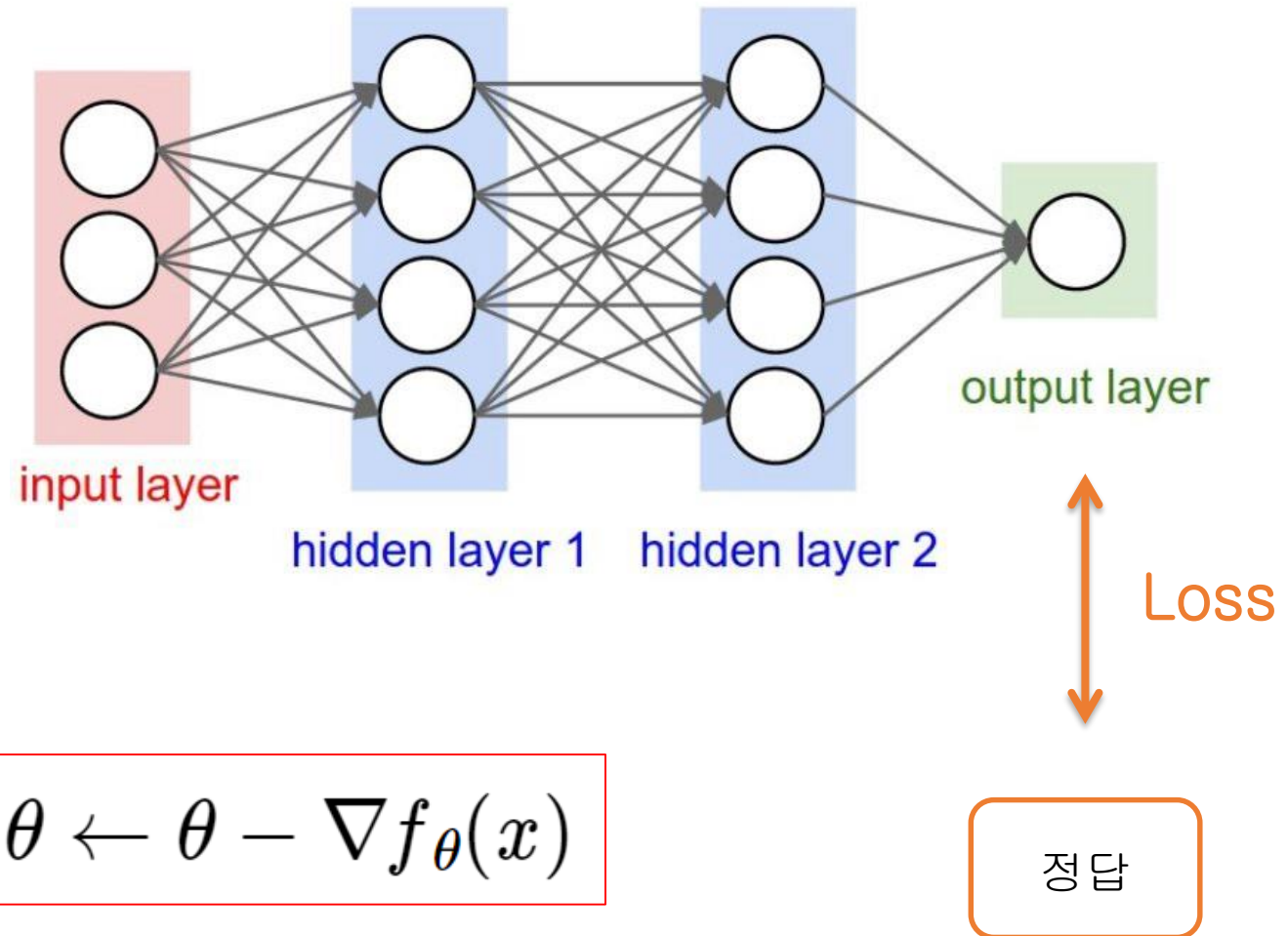
Convolutional Neural Networks

Convolutional Neural Network (CNN)

- CNN Diagram GIF
  - https://towardsdatascience.com/a-comprehensive-guide-to-convolutional-neural-networks-the-eli5-way-3bd2b1164a53
- Filter values를 최적화 과정을 통해서 찾음 (+ bias)
- Input과 Output의 Dimension이 다를 수 있음
  - Padding과 Stride를 통해서 조절
  - Padding GIF
    - https://towardsdatascience.com/covolutional-neural-network-cb0883dd6529

[Stride]