Summary

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In this class,

1) Introduction to Natural Language Processing
2) Preprocessing
3) Word Embedding
4) Text Classification

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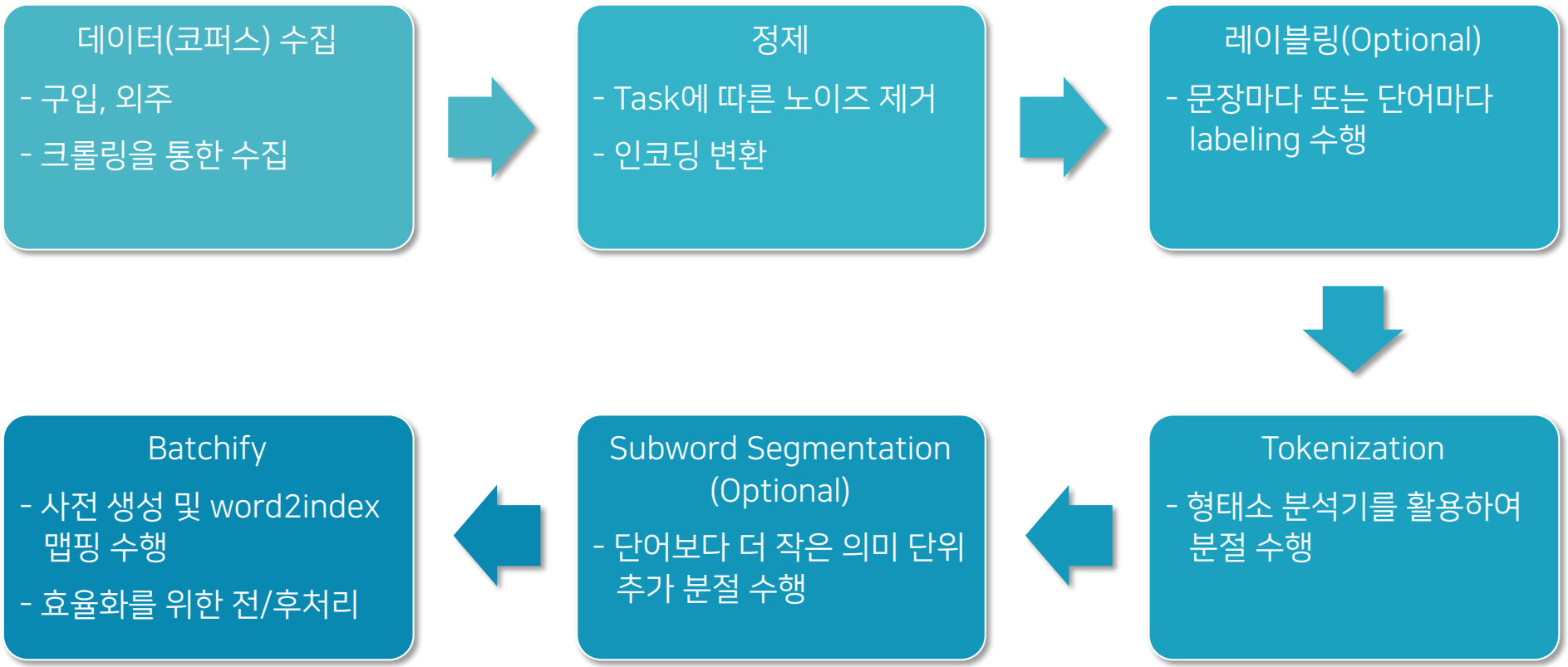

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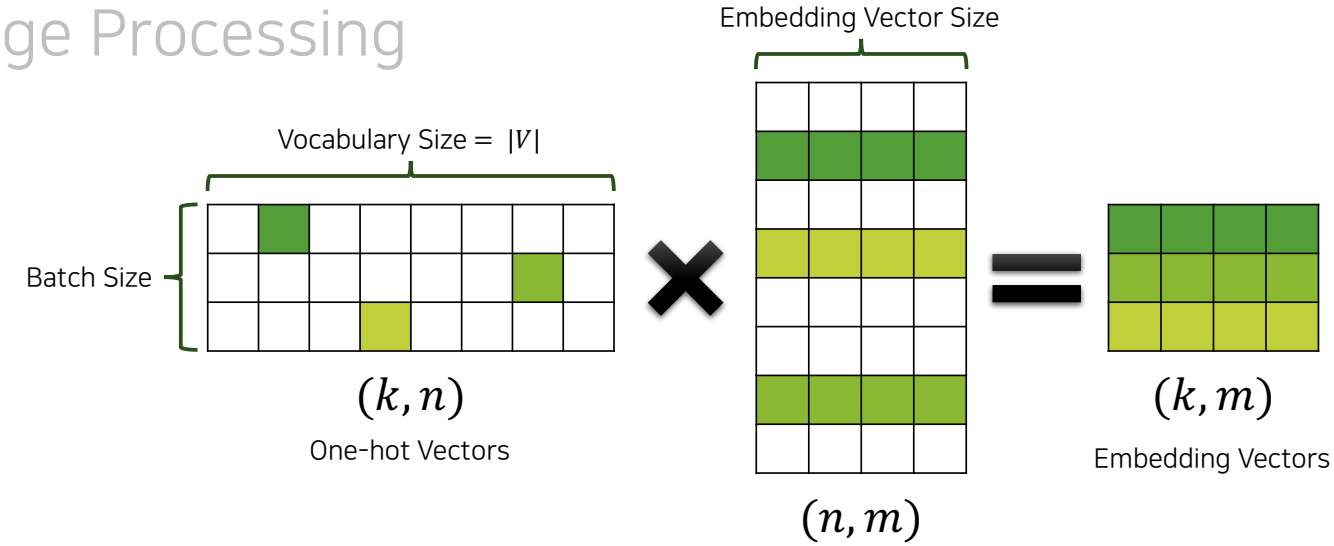

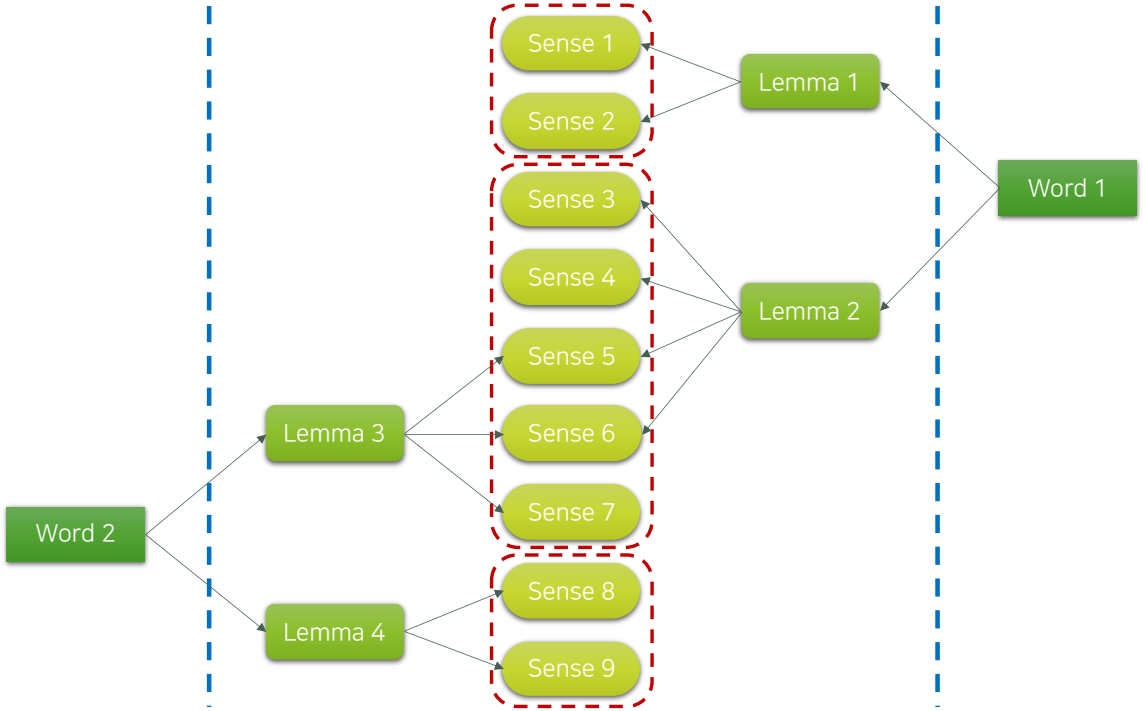

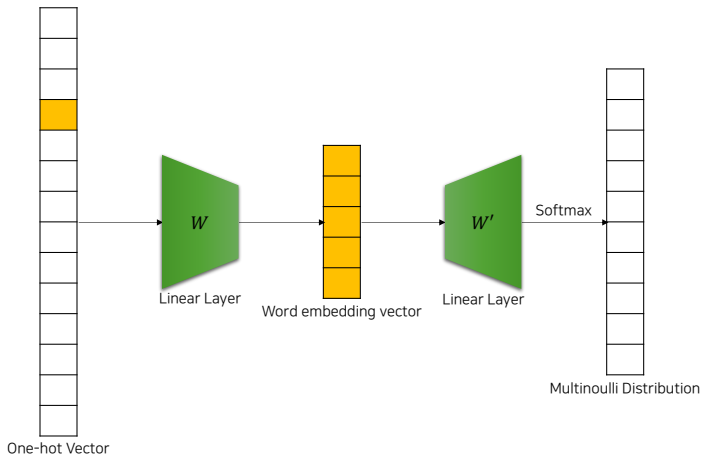

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$$\hat{\theta} = \underset{\theta \in \Theta}{\operatorname{argmax}} \mathbb{E}_{\mathrm{x} \sim P(\mathrm{x})} \left[\mathbb{E}_{\mathrm{y} \sim P(\mathrm{y}|\mathrm{x})} \left[\log P(\mathrm{y}|\mathrm{x}; \theta) \right] \right]$$

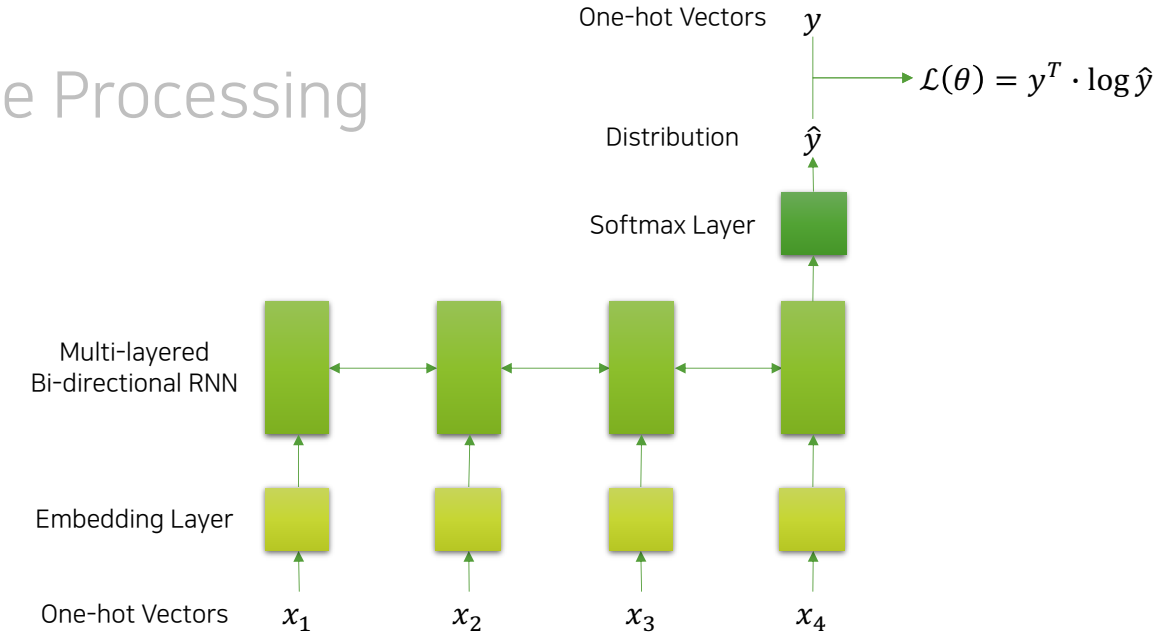
$$\mathcal{D} = \{(x_i, y_i)\}_{i=1}^{N}$$

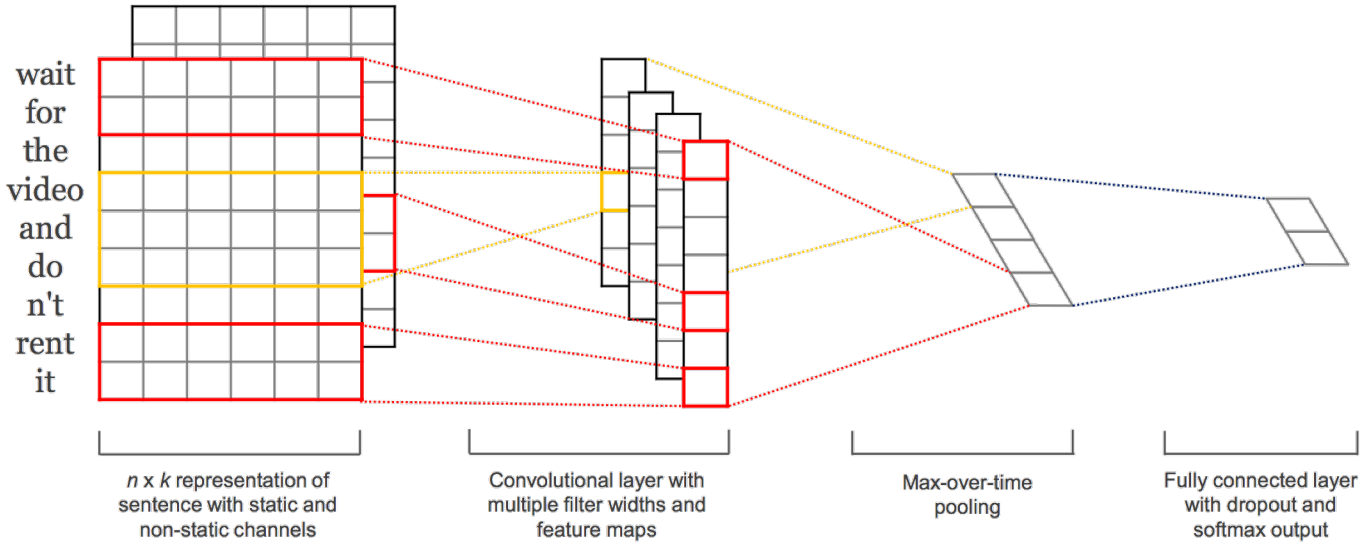
$$\hat{\theta} = \underset{\theta \in \Theta}{\operatorname{argmax}} \sum_{i=1}^{N} \log P(y_i|x_i; \theta)$$

$$= \underset{\theta \in \Theta}{\operatorname{argmin}} - \sum_{i=1}^{N} \log P(y_i|x_i; \theta)$$

$$\mathcal{L}(\theta) = -\sum_{i=1}^{N} \log P(y_i|x_i; \theta)$$

$$\theta \leftarrow \theta - \alpha \nabla_\theta \mathcal{L}(\theta)$$





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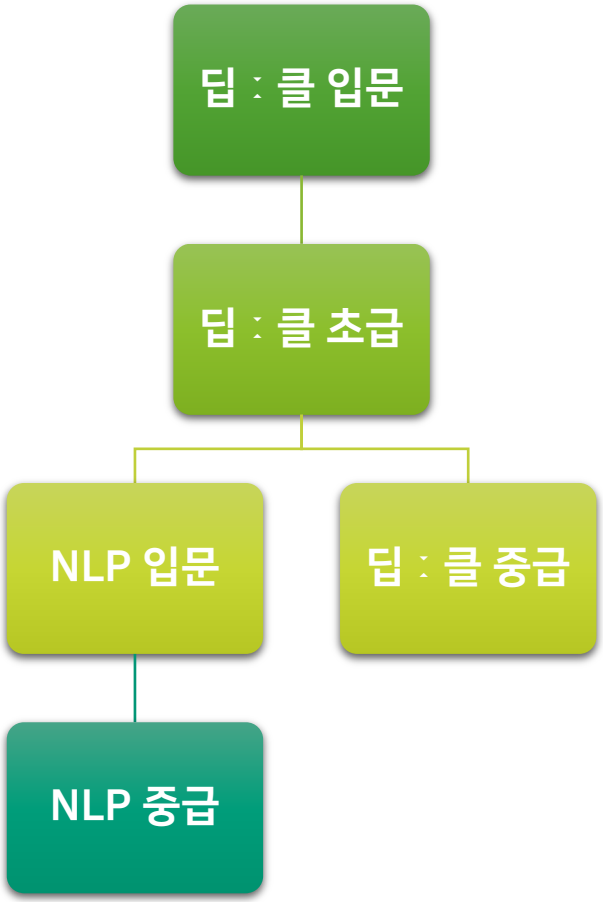

- Linear Layer
- Loss Functions (e.g. MSE, BCE Loss)
- Backpropagation & Gradient Descent
- Regression & Classification

- Statistical Approach (e.g. Maximum Likelihood Estimation, MLE)
- Geometric Approach (e.g. Manifold Hypothesis)
- Convolutional / Recurrent Neural Networks (CNN, RNN)
- How to be a professional?

- Preprocessing
- Word Embedding
- Text Classification (CNN, RNN)

- Advanced Topics (e.g. Transfer Learning)
- Generative Learning (e.g. GAN, VAE)
- Anomaly Detection

- Natural Language Generation
- Language Modeling
- Sequence-to-Sequence
- Machine Translation