

Lecture 20

1D CNN with pre-trained word embedding for text classification

Feature matrix for classification: BoW

	w1 (keyword eg. wolf)	w2 (eg. red wolf)	w3	w4
Doc 1 (sample)	9	2 (count)		
Doc 2	8	1		

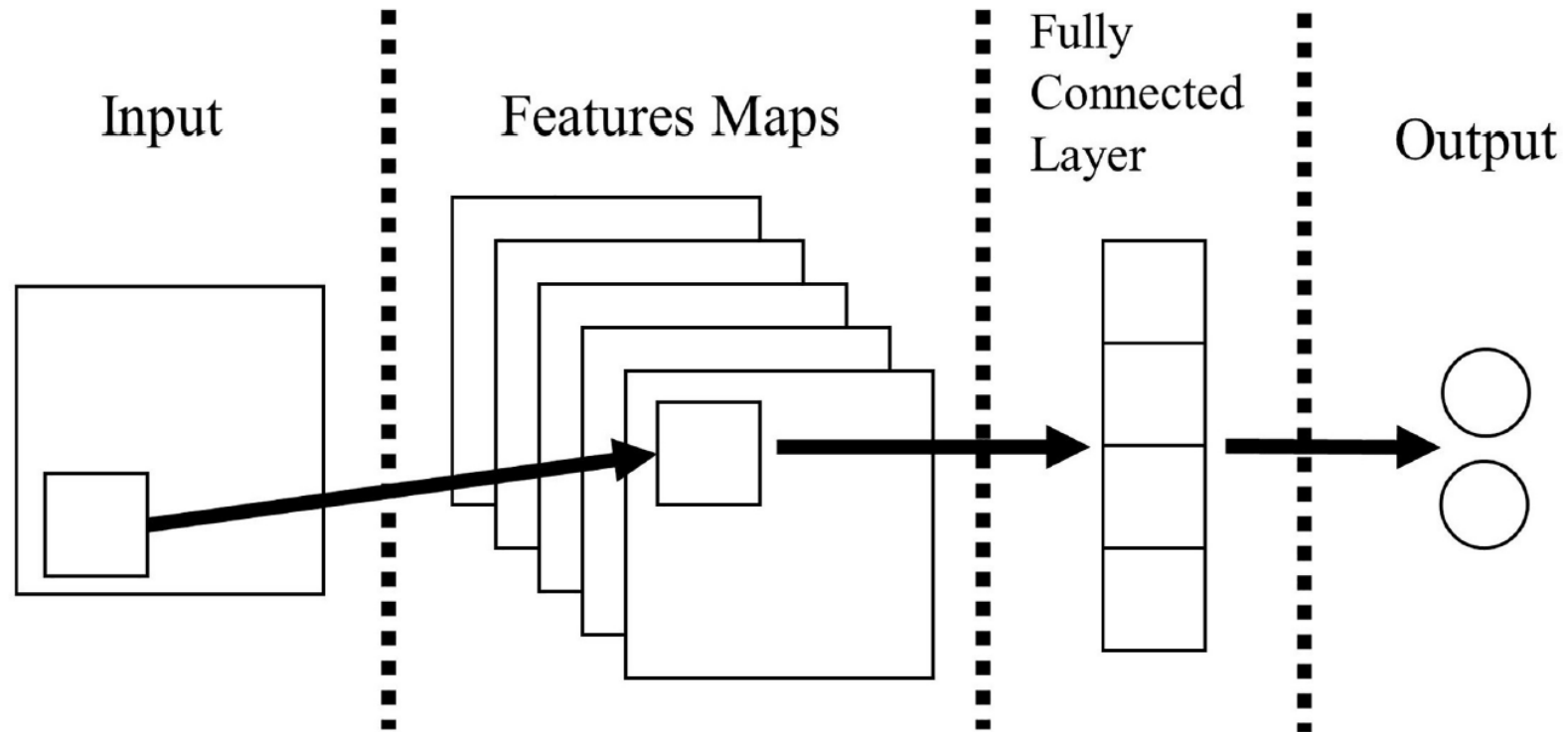
	Label
Doc 1 (sample)	POS
Doc 2	NEG
	(for a sentiment analysis task)

Pre-trained word embedding

- Word2Vec embedding vector for each word in your input sentence
 - 300-dimension vector for each word
 - Question: How to apply it to a classifier?
- 1) LSTM (word vector by word vector)-sequence of word modelling – language generation ([encoder-decoder](#) for [Seq2Seq](#))
 - 2) Text classification ?

<https://code.google.com/archive/p/word2vec/>

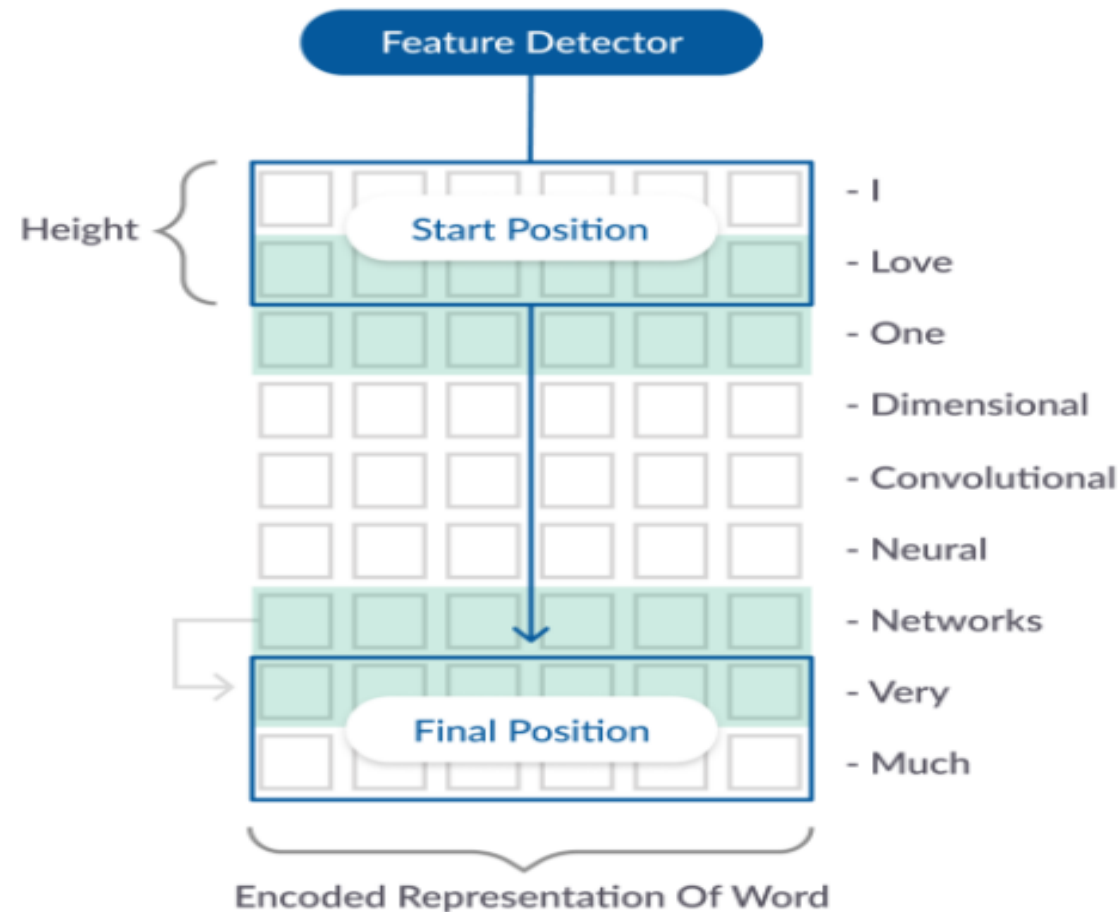
CNN



LeCun, Yann, and Yoshua Bengio. "Convolutional networks for images, speech, and time series." *The handbook of brain theory and neural networks* 3361, no. 10 (1995): 1995.

1D CNN with word embedding for text classification

(slide a bigram filter F1 *Somebody likes* top to bottom → max pooling over time → feature)



Feature matrix for classification: 1D CNN with Word2Vec

	F1 (FILTER)	F2	F3	F4
Doc 1 (sample)	0.9	0.002		
Doc 2	0.6	0.008		

	Label
Doc 1 (sample)	POS
Doc 2	NEG
	(for a sentiment analysis task)