

Video Lectures

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➤ Week 1 - Introduction to Natural Language Processing

- | | | |
|---|---|---|
| ✓ | Introduction (Part 1) (11:17) |     |
| ✓ | Introduction (Part 2) (10:28) |    |


➤ Week 1 - The Language Modeling Problem

- | | | |
|---|---|---|
| ✓ | Introduction to the Language Modeling Problem (Part 1) (6:17) |      |
| ✓ | Introduction to the Language Modeling Problem (Part 2) (7:12) |    |
| ✓ | Markov Processes (Part 1) (8:56) |    |
| ✓ | Markov Processes (Part 2) (6:28) |    |
| ✓ | Trigram Language Models (9:40) |    |
| ✓ | Evaluating Language Models: Perplexity (12:36) |    |


➤ Week 1 - Parameter Estimation in Language Models

- | | | |
|---|---|---|
| ✓ | Linear Interpolation (Part 1) (7:46) |    |
| ✓ | Linear Interpolation (Part 2) (11:35) |    |
| ✓ | Discounting Methods (Part 1) (9:26) |    |
| ✓ | Discounting Methods (Part 2) (3:34) |    |

➤ Week 1 - Summary

✓ [Summary \(2:31\)](#)   

➤ Week 2 - Tagging Problems, and Hidden Markov Models

✓ [The Tagging Problem \(10:01\)](#)     

✓ [Generative Models for Supervised Learning \(8:57\)](#)   

✓ [Hidden Markov Models \(HMMs\): Basic Definitions \(12:00\)](#)   

✓ [Parameter Estimation in HMMs \(13:16\)](#)   

✓ [The Viterbi Algorithm for HMMs \(Part 1\) \(14:07\)](#)   

✓ [The Viterbi Algorithm for HMMs \(Part 2\) \(3:31\)](#)   


✓ [The Viterbi Algorithm for HMMs \(Part 3\) \(7:33\)](#)   

✓ [Summary \(1:50\)](#)   

➤ Week 3 - Parsing, and Context-Free Grammars

✓ [Introduction \(0:28\)](#)   

✓ [Introduction to the Parsing Problem \(Part 1\) \(10:37\)](#)    























































✓ [Introduction to the Parsing Problem \(Part 2\) \(4:20\)](#)   


✓ [Context-Free Grammars \(Part 1\) \(12:11\)](#)   

✓ [Context-Free Grammars \(Part 2\) \(2:22\)](#)   

✓ [A Simple Grammar for English \(Part 1\) \(10:32\)](#)   

✓ [A Simple Grammar for English \(Part 2\) \(5:30\)](#)   

✓	A Simple Grammar for English (Part 3) (11:21)	  
✓	A Simple Grammar for English (Part 4) (2:20)	  
✓	Examples of Ambiguity (5:56)	  
➤ Week 3 - Probabilistic Context-Free Grammars (PCFGs)		
✓	Introduction (1:12)	    
✓	Basics of PCFGs (Part 1) (9:43)	  
✓	Basics of PCFGs (Part 2) (8:26)	  
✓	The CKY Parsing Algorithm (Part 1) (7:31)	  
✓	The CKY Parsing Algorithm (Part 2) (13:22)	  
✓	The CKY Parsing Algorithm (Part 3) (10:07)	  
➤ Week 4 - Weaknesses of PCFGs		
✓	Weaknesses of PCFGs (14:59)	    
➤ Week 4 - Lexicalized PCFGs		
✓	Introduction (00:17)	    
✓	Lexicalization of a Treebank (10:44)	  
✓	Lexicalized PCFGs: Basic Definitions (12:40)	  
✓	Parameter Estimation in Lexicalized PCFGs (Part 1) (5:28)	  
✓	Parameter Estimation in Lexicalized PCFGs (Part 2) (9:08)	  
✓	Evaluation of Lexicalized PCFGs (Part 1) (9:32)	  

✓ Evaluation of Lexicalized PCFGs (Part 2) (11:28)   

➤ Week 5 - Introduction to Machine Translation (MT)

✓ Opening Comments (0:25)    

✓ introduction (2:03)   



✓ Challenges in MT (8:06)   



✓ Classical Approaches to MT (Part 1) (8:02)   

✓ Classical Approaches to MT (Part 2) (5:56)   

✓ Introduction to Statistical MT (12:31)   

➤ Week 5 - The IBM Translation Models


✓ Introduction (3:24)     

✓ IBM Model 1 (Part 1) (13:06)   

✓ IBM Model 1 (Part 2) (9:01)   


✓ IBM Model 2 (11:27)   

✓ The EM Algorithm for IBM Model 2 (Part 1) (5:09)   

✓ The EM Algorithm for IBM Model 2 (Part 2) (8:37)   

✓ The EM Algorithm for IBM Model 2 (Part 3) (9:28)   

✓ The EM Algorithm for IBM Model 2 (Part 4) (4:52)   

✓ Summary (1:48)   

➤ Week 6 - Phrase-based Translation Models



✓	Introduction (0:41)				
✓	Learning Phrases from Alignments (Part 1) (9:18)				
✓	Learning Phrases from Alignments (Part 2) (7:01)				
✓	Learning Phrases from Alignments (Part 3) (8:47)				
✓	A Sketch of Phrase-based Translation (8:17)				

➤ Week 6 - Decoding of Phrase-based Translation Models


























































✓	Definition of the Decoding Problem (Part 1) (9:12)				
✓	Definition of the Decoding Problem (Part 2) (13:00)				
✓	Definition of the Decoding Problem (Part 3) (10:43)				
✓	The Decoding Algorithm (Part 1) (14:39)				
✓	The Decoding Algorithm (Part 2) (6:23)				
✓	The Decoding Algorithm (Part 3) (12:29)				

➤ Week 7 - Log-linear Models



✓	Introduction (0:47)				
✓	Two Example Problems (11:19)				
✓	Features in Log-Linear Models (Part 1) (13:56)				
✓	Features in Log-Linear Models (Part 2) (10:13)				
✓	Definition of Log-linear Models (Part 1) (11:50)				
✓	Definition of Log-linear Models (Part 2) (3:45)				

✓	Parameter Estimation in Log-linear Models (Part 1) (12:44)	  
✓	Parameter Estimation in Log-linear Models (Part 2) (4:13)	  
✓	Smoothing/Regularization in Log-linear Models (15:12)	  
➤ Week 8 - Log-linear Models for Tagging (MEMMs)		
✓	Introduction (1:41)	    
✓	Recap of the Tagging Problem (3:15)	  
✓	Independence Assumptions in Log-linear Taggers (8:32)	  
✓	Features in Log-Linear Taggers (13:21)	  
✓	Parameters in Log-linear Models (3:59)	  
✓	The Viterbi Algorithm for Log-linear Taggers (9:37)	  
✓	An Example Application (9:28)	  
✓	Summary (2:45)	  
➤ Week 8 - Log-Linear Models for History-based Parsing		
✓	Introduction (0:47)	    
✓	Conditional History-based Models (7:14)	  
✓	Representing Trees as Decision Sequences (Part 1) (7:23)	  
✓	Representing Trees as Decision Sequences (Part 2) (10:20)	  
✓	Features, and Beam Search (12:10)	  
✓	Summary (1:12)	  

➤ Week 9 - Unsupervised Learning: Brown Clustering

✓
Introduction (0:36)





Word Cluster Representations (8:36)

[The Brown Clustering Algorithm \(Part 1\) \(11:50\)](#)

[The Brown Clustering Algorithm \(Part 2\) \(8:30\)](#)


[The Brown Clustering Algorithm \(Part 3\) \(9:18\)](#)




[Clusters in NE Recognition \(Part 1\) \(11:33\)](#)



[Clusters in NE Recognition \(Part 2\) \(7:28\)](#)

➤ Week 9 - Global Linear Models (GLMs)

✓
Introduction (0:30)
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[Recap of History-based Models \(7:11\)](#)

✓ Motivation for GLMs (6:34) ☰ ☷ ⬇


[Three Components of GLMs \(14:39\)](#)







[GLMs for Parse Reranking \(10:36\)](#)






 Parameter Estimation with the Perceptron Algorithm (6:11)
 




[Summary \(3:01\)](#)




➤ Week 10 - GLMs for Tagging

[Introduction \(1:02\)](#)





















✓
Recap of GLMs (7:40)





✓	GLMs for Tagging (Part 1) (5:26)	  
✓	GLMs for Tagging (Part 2) (7:35)	  
✓	GLMs for Tagging (Part 3) (7:06)	  
✓	GLMs for Tagging (Part 4) (6:00)	  

➤ Week 10 - GLMs for Dependency Parsing

✓	Introduction (0:37)	    
✓	The Dependency Parsing Problem (Part 1) (5:21)	  
✓	The Dependency Parsing Problem (Part 2) (13:53)	  
✓	GLMs for Dependency Parsing (Part 1) (11:59)	  
✓	GLMs for Dependency Parsing (Part 2) (8:28)	  
✓	Experiments with GLMs for Dep. Parsing (5:38)	  
✓	Summary (2:50)	