

Schedule

All videos will be available in this shared folder (Link). The last year's videos are available in this shared folder (Link).

Date	Lecture	Readings	Logistics
Module 1: Introduction to Natural Language Processing			
9/4	Lecture #1 : Overview of NLP [slides video]	<ul style="list-style-type: none"> • SLP3 ch2 	
9/9	Lecture #2 : Text Classification [slides video]	<ul style="list-style-type: none"> • SLP3 ch4 • E ch2-4 • Dani et al. 2017 	
9/11	Lecture #3 : Deep Learning Basics [slides video]	<ul style="list-style-type: none"> • Colab example • Gradient Descent (Ruder 2016) • Dropout (Srivastava et al. 2014) 	
9/16	Lecture #4 : Word Vectors [slides video]	<ul style="list-style-type: none"> • SLP3 ch 6 • E ch 14 	
Module 2: Modeling and Neural Networks			
9/18	Lecture #5 : Language Model [slides video]	<ul style="list-style-type: none"> • SLP3 ch 3 • Chen & Goodman 	HW 1 due & Project survey due (11:59pm 9/18)
9/23	Lecture #6 : Recurrent Networks [slides video]	<ul style="list-style-type: none"> • Blog • Karpathy et al. 2015 • Hochreiter et al. 1997 	
9/25	Lecture #7 : Attention and Transformer [slides video]	<ul style="list-style-type: none"> • Bahdanau et. al 2014 • Vaswani et. al 2017 	
9/30	Lecture #8 : Pre-training and Self-supervised Learning [slides video]	<ul style="list-style-type: none"> • Devlin et al. 2019 • Yang et al. 2019 • Survey • Lewis et al. 2020 	
10/2	Lecture #9 : Conditioned Generation [slides video]	<ul style="list-style-type: none"> • Sutskever et al. 2014 • Graves 2012 • GENIE • WMT 	
Module 3: Syntactic and Semantic Analysis			
10/7	Lecture #10 : Morphology & Sequence Labeling [slides video]	<ul style="list-style-type: none"> • BPE, Sennrich et al. 2016 • SLP3 • Collins 2011 • Zhu's notes • CRF 	

10/9	Lecture #11 : Syntactic Parsing [slides video 1]	<ul style="list-style-type: none"> • SLP3 ch12 • SLP3 ch13 • SLP3 ch14 • Dozat et al. 2017 • Kiperwasser et al. 2016 • UD • Chen et al. 2014 • Kitaev et. al 2018 	HW 2 due & Team information due (11:59pm 10/9)
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Module 4: Advanced Representation Learning and Algorithms

10/14	Lecture #12 : Parameter-efficient Fine-tuning [slides video]	<ul style="list-style-type: none"> • He et al. 2021 • Dettmers et al. 2023 • Hu et al. 2021 	
10/16	Lecture #13 : Multi-task Learning in NLP [slides video]	<ul style="list-style-type: none"> • Understanding Dataset shift • Caruana 1997 • Neubig and Hu, 2018 • Chu et al. 2017 • Johnson et al. 2017 • Conneau et al. 2020 • Ganin et al. 2015 	
10/21	Lecture #14 : Prompting and Zero-/Few-shot Learning [slides video]	<ul style="list-style-type: none"> • Liu et al. 2021 	
10/23	Lecture #15 : Modeling Long Sequences [slides video]	<ul style="list-style-type: none"> • Dai et al. 2019 • Child et al. 2019 • Kitaev et al. 2020 • Wang et al. 2021 • Xiong et al. 2021 • SLP3 ch21 • SLP3 ch22 	
10/28	Lecture #16 : Structured Learning Algorithms [slides video]	<ul style="list-style-type: none"> • Karpathy 2016 • Goldberg Book ch19-19.3 • Williams 1992 • Blum and Mitchell 1998 • Collins 2002 • Taskar et al. 2005 • Norouzi et al. 2016 	
10/30	Lecture #17 : Latent Variable Models [slides video]	<ul style="list-style-type: none"> • Tutorial on VAE • Kingma and Welling et al. 2014 • Bowman et al. 2016 • Miao and Blunsom 2016 • Chen et al. 2017 • Jiang et al. 2017 • Hu et al. 2017 • Yin et al. 2018 • Kim et al. 2019 	HW 3 (Proposal) due (11:59pm 10/30)
11/4	Lecture #18 : Retrieval-Augmented Generation of LLMs (Guest Lecture by Akari) [slides video]	<ul style="list-style-type: none"> • Akari's slides 	

Module 5: NLP Applications

11/6	Lecture #19 : Text-based Question Answering [slides video]	<ul style="list-style-type: none"> • SLP3 ch23 • Weston et al. 2015 • Rajpurkar et al. 2016 • Seo et al. 2017 • Chen et al. 2017 • Jia and Liang 2017 • Kwiatkowski et al. 2019 	
11/11	Lecture #20 : LLMs and Knowledge-Graph [slides video]	<ul style="list-style-type: none"> • SLP3 ch17 	
11/13	Lecture #21 : Vision-Language Learning (Guest Lecture) [slides video]	<ul style="list-style-type: none"> • Baltrusaitis et al. 2017 • Radford et al. 2021 • Ramesh et al. 2021 	HW 4 due (11:59pm 11/13)
11/18	Lecture #22 : Machine Translation [slides video]	<ul style="list-style-type: none"> • IBM Model • Moses • Johnson et al. 2016 • Koehn et al. 2017 • Arivazhagan et al. 2019 • SLP3 ch10 	
11/20	Lecture #23 : Dialog System [slides video]	<ul style="list-style-type: none"> • SLP3 ch24 	
11/25	Lecture #24 : Computational Social Science, Bias and Fairness [slides video]	<ul style="list-style-type: none"> • Zhao et al. 2017 • Blodgett et al. 2020 	
11/27	Lecture #25 : Code Generation and LLM Programming [slides video]	<ul style="list-style-type: none"> • Survey. Jiang et al. 2017 	
12/2		Project Presentation	
12/4		Project Presentation	
12/6			Project report due 11:59pm 12/6