

2023.1S.CS728 Calendar

2023/Jan/04 Wed

- Introductory lecture

2023/Jan/05 Thu

- Course contents: building blocks and applications
- Sequence modeling

2023/Jan/09 Mon

- Sequence modeling
- Viterbi dynamic program, some variations
- Features, word embeddings, feature map
- MEMM and logistic regression (similarity with RNN)

2023/Jan/12 Thu

- Shortcomings of MEMMs: local normalization
- CRF and Hidden Markov SVM learning

2023/Jan/16 Mon

- Segment-CRF, PCFG and chart parsing
- Factor graphs, message passing

2023/Jan/19 Thu

- Finish up message passing
- Basic word embeddings: LSI, word2vec, GloVe

2023/Jan/23 Mon

- Deep dive into word2vec and GloVe
- Contextual word embeddings: ConvNet, LSTM/GRU

2023/Jan/26 Thu (Republic Day)

- (No lecture: Republic Day)

2023/Jan/30 Mon

- Query-key-value formalism
- Recurrence vs attention; transformer
- Dense passage retrieval

2023/Feb/02 Thu

- Dual encoder, ColBERT, GTR

2023/Feb/06 Mon

- Guest lecture (Indra Roy) on graph neural networks

2023/Feb/09 Thu

- Review of graph neural networks
- Assignment 1 review progress
- Brief history of Transformers

2023/Feb/13 Mon

- History of transformers, continued
- (If we have time: Sparse attention: LongFormer, BigBird)
- Back to graph representation

2023/Feb/16 Thu

- Retrieval augmented generation

2023/Feb/20 Mon (Midsem Week)

- No class

2023/Feb/22 Wed (Midsem week)

- Quiz1

2023/Feb/23 Thu (Midsem Week)

- No class

2023/Feb/27 Mon

- Quiz1 review
- KG modeling and completion

2023/Mar/02 Thu

- KG modeling and completion, continued

2023/Mar/06 Mon

- KG modeling and completion, continued

2023/Mar/09 Thu

- Box embeddings
- Interaction between KG and corpus representations

2023/Mar/13 Mon (Assignment 1 Deadline)

- Bridging text and KG: fine typing
- Bridging text and KG: named entity disambiguation

- Bridging text and KG: relation classification

2023/Mar/16 Thu

- Differentiable KGQA
- Semantic interpretation

2023/Mar/20 Mon

- Semantic interpretation, continued

2023/Mar/23 Thu (Assignment 2 Deadline)

- Text, table, quantity QA

2023/Mar/27 Mon

- Quiz2a

2023/Mar/30 Thu

- SEMPRE (semantic interpretation for KGQA)
- TAPAS, TABERT
- PICARD, text2python

2023/Apr/03 Mon

- RATSQ
- DuoRAT

2023/Apr/06 Thu

- SmBoP

2023/Apr/10 Mon

- Finish SmBoP and text2sql
- Blending LLM with KG info
- Adapter architecture

2023/Apr/13 Thu

- Quiz2b
- Large language models with tools
- Guest lecture on OpenIE