Julius-Maximilians-
UNIVERSITÄT
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data science

XtAI Lab II

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Task I: Seq2seq Attention

- Goal:
  - Learn about sequence-to-sequence (seq2seq)
  - Learn about the basic attention-mechanism

- Phase 1:
  - 2 weeks time
  - Summarize and present 1 seq2seq and 1 attention paper
  - 15 min presentation & 2-4 pages report

- Papers:
  - Seq2seq
    - Sequence to Sequence Learning with Neural Networks (https://arxiv.org/pdf/1409.3215.pdf)
    - Learning Phrase Representations using RNN Encoder–Decoder for Statistical Machine Translation (https://arxiv.org/pdf/1406.1078.pdf)
  - Attention
    - Attention is All You Need (https://arxiv.org/pdf/1706.03762.pdf)
    - Neural Machine Translation by Jointly Learning to Align and Translate (https://arxiv.org/pdf/1409.0473.pdf)

Task I: Seq2seq Attention

- Goal:
  - Implementing seq2seq knowledge extraction

- Phase 2:
  - 4 weeks time
  - Implement 2 dataloaders
  - Implement encoder-decoder-model
  - Add attentions
  - 15 min result presentation (including code) & 4-6 pages report

- Datasets:
  - SemEval-2010 Task 8 Dataset (https://www.kaggle.com/drtoshi/semeval2010-task-8-dataset?select=Description.txt)
  - WebNLG Challenge Corpus (https://webnlg-challenge.loria.fr/download/)

Task II: Graph Attention

- Goal:
  - Learn about Graph Attention

- Phase 1:
  - 1 week time
  - Summarize and present graph neural network paper
  - 7 min presentation & 1-2 pages report

- Papers:
  - Modeling Relational Data with Graph Convolutional Networks (https://www.google.com/search?q=translation&rlz=1C5CHFA_enDE849DE849&oq=Translation&aqs=chrome.0.0i271j69i57j0i433j0j69i60j69i65l2j69i61.2612j0j7&sourceid=chrome&ie=UTF-8)
  - Graph Attention Networks (https://arxiv.org/pdf/1710.10903.pdf)

Task II: Graph Attention

- Goal:
  - Implement Relational Graph Attention Networks on Link Prediction and Node Classification

- Phase 2:
  - 5 weeks time
  - Get R-GCN repo running
  - Implement dataloader for ConceptNet
  - Add attentions to R-GCN
  - Add constant attention head with weights from graph

- Datasets:
  - FB15k-237, FB15k, WN18, AIFB, MUTAG, BGS, AM (in repo)
  - ConceptNet