

# Seminar ML / Dialogsysteme – Summer 2020

KW	Presentation (live)	Discussion (async)	KW	Presentation (live)	Discussion (async)
17 (20.04.)	Planning	Planning	24 (08.06.)	Dialogue Systems Basics	Dialogue Systems Basics
18 (27.04.)	Machine Learning Basics	Machine Learning Basics	25 (15.06.)	DS1, DS2	DS1, DS2
19 (04.05.)	ML1, ML2	ML1, ML2	26 (22.06.)	DS3, DS4	DS3, DS4
20 (11.05.)	ML3, ML4	ML3, ML4	27 (29.06.)	DS5, DS6, DS7	DS5, DS6, DS7
21 (18.05.)	ML5, ML6, ML7	ML5, ML6, ML7	28 (06.07.)	DS8, DS9, DS10	DS8, DS9, DS10
22 (25.05.)	ML8, ML9, ML10	ML8, ML9, ML10	29 (13.07.)	Q&A	Klausur
23 (01.06.)	Pfingstferien (entfällt)	Pfingstferien (entfällt)			

# ML Topics – Pick one!

- ML1: Language Modeling before Deep Learning
  - [http://josecamachocollados.com/book\\_embNLP\\_draft.pdf](http://josecamachocollados.com/book_embNLP_draft.pdf) (2.1.1, 2.1.2)
  - <https://towardsdatascience.com/introduction-to-hidden-markov-models-cd2c93e6b781>
  - <https://web.stanford.edu/~jurafsky/slp3/A.pdf>
  - <https://web.stanford.edu/~jurafsky/slp3/3.pdf>
  - <https://www.coursera.org/lecture/language-processing/hidden-markov-models-cNdwa>
  - [https://d2l.ai/chapter\\_recurrent-neural-networks/language-models-and-dataset.html](https://d2l.ai/chapter_recurrent-neural-networks/language-models-and-dataset.html)
- ML2: AutoEncoders and Generative Models
  - [http://www.cs.toronto.edu/~rsalakhu/ITA\\_ALT\\_Part2.pdf](http://www.cs.toronto.edu/~rsalakhu/ITA_ALT_Part2.pdf)
  - <https://www.youtube.com/watch?v=H1AllrJ-30>
  - <https://www.youtube.com/watch?v=9zKuYviFFS8>
- ML3: Static Word Embeddings
  - [http://josecamachocollados.com/book\\_embNLP\\_draft.pdf](http://josecamachocollados.com/book_embNLP_draft.pdf) (3 (speziell 3.2))
  - <http://papers.nips.cc/paper/5021-distributed-representations-of-words-and-phrases-and-their-compositionality.pdf>
  - <http://web.stanford.edu/class/cs224n/> (Tue Jan 7)
- ML4: Word Sense Embeddings
  - [http://josecamachocollados.com/book\\_embNLP\\_draft.pdf](http://josecamachocollados.com/book_embNLP_draft.pdf) (5, 2.3.1)
- ML5: Recurrent Neural Networks
  - [https://d2l.ai/chapter\\_recurrent-neural-networks/index.html](https://d2l.ai/chapter_recurrent-neural-networks/index.html)
  - <http://web.stanford.edu/class/cs224n/> (Thu Jan 23)
  - [https://d2l.ai/chapter\\_recurrent-neural-networks/rnn.html#](https://d2l.ai/chapter_recurrent-neural-networks/rnn.html#)
- ML6: LSTMs
  - [http://josecamachocollados.com/book\\_embNLP\\_draft.pdf](http://josecamachocollados.com/book_embNLP_draft.pdf) (6.3)
  - <https://www.bioinf.jku.at/publications/older/2604.pdf>
  - <http://web.stanford.edu/class/cs224n/> (Tue Jan 28)
  - [https://d2l.ai/chapter\\_recurrent-modern/lstm.html](https://d2l.ai/chapter_recurrent-modern/lstm.html)
- ML7: Transformers
  - [http://josecamachocollados.com/book\\_embNLP\\_draft.pdf](http://josecamachocollados.com/book_embNLP_draft.pdf) (6.2, 6.4)
  - [https://d2l.ai/chapter\\_attention-mechanisms/attention.html](https://d2l.ai/chapter_attention-mechanisms/attention.html)
  - <https://arxiv.org/abs/1706.03762>
  - [https://d2l.ai/chapter\\_attention-mechanisms/transformer.html](https://d2l.ai/chapter_attention-mechanisms/transformer.html)
  - <https://jalammar.github.io/illustrated-transformer/>
- ML8: Bert
  - [http://josecamachocollados.com/book\\_embNLP\\_draft.pdf](http://josecamachocollados.com/book_embNLP_draft.pdf) (6.4)
  - <http://web.stanford.edu/class/cs224n/> (Tue Feb 18)
  - <https://arxiv.org/pdf/1810.04805.pdf>
  - [https://d2l.ai/chapter\\_natural-language-processing-pretraining/bert.html](https://d2l.ai/chapter_natural-language-processing-pretraining/bert.html)
- ML9: ConvNets
  - <http://web.stanford.edu/class/cs224n/slides/cs224n-2020-lecture11-convnets.pdf>
  - [http://www.cs.toronto.edu/~rsalakhu/ITA\\_ALT\\_Part1.pdf](http://www.cs.toronto.edu/~rsalakhu/ITA_ALT_Part1.pdf) (slide 36ff)
  - [https://d2l.ai/chapter\\_convolutional-neural-networks/index.html](https://d2l.ai/chapter_convolutional-neural-networks/index.html)
- 10. ConvNets for NLP
  - <http://web.stanford.edu/class/cs224n/slides/cs224n-2020-lecture11-convnets.pdf> (ab 3. (CNNs for sentence classification))
  - [https://d2l.ai/chapter\\_natural-language-processing-applications/sentiment-analysis-cnn.html](https://d2l.ai/chapter_natural-language-processing-applications/sentiment-analysis-cnn.html)

# Formal Requirements – Your Topic

- Pick a topic, find helpful sources, select content to present.
- Send me a table of content of your presentation until Thursday before your presentation
- Add a new topic (your topic) to the forum, list key references you used, before your presentation
- Present your paper live (20min), discuss your paper live (10min)
- Upload your slides to the forum, post at least two questions about your topic right after your presentation.
- Moderate and participate in the discussions in the forum. Clarify misunderstandings. Conclude the discussions and post the answers to your questions just before the next meeting.

# Formal Requirements – All other topics

For EACH other topic:

1. Solve questions (privately at home) posted by the presenter in the forum
  2. Comment on at least one aspect (listed on the right) for at least one question (listed below). Participate in any forum discussions resulting from comments.
- What did you like?
  - What was the most interesting aspect you learned?
  - What did you not understand?
  - What would you suggest to do differently? How?
  - About what would you like to learn/discuss more?

Potential aspects to comment on:

- **Content:** structure, covered topics, length, logical rigor, story line, line of thought, correctness completeness,...
- **Presentation material:** slides, figures, demos,...
- **Presentation style:** clarity, speed, appearance,...
- **References:** citations, related work, bigger picture,...
- ....