Paper Presentations and Discussion Schedule
CS584: Deep Learning
Spring 2020

Each student will present a paper in class. Each paper is about deep learning or somehow related to it – many were suggested by the class itself. Some papers are classical papers in the field while others are more recent. Like many conference talks, each presentation will be allotted 20 minutes for the presentation itself and 10 minutes for discussion.

Each presenter should tell something of a story about their paper. Most likely, you will be unable to present every detail from your paper, so focus on the important parts of your paper. For example, you should try to answer the following questions in your presentation: What problem is the paper addressing? Why is the problem important, and why is the approach in the paper interesting or successful? How did the authors address the problem, and how is this approach related to earlier and/or later approaches? Which details are most relevant to the members of the class, who may not be familiar with this research topic but may find some of the issues or ideas to be helpful for their own work? You should check for related papers and use them to improve your presentation. If you are presenting an older paper, then you may want to look at newer papers that cite your paper, and if you are presenting a newer paper, then you may want to look at older papers that your paper cites. You do not need to use slides, but you may find them helpful for the time constraints. You are not expected to be an expert on the topic of your presentation, but you should be able to answer the above questions.

The audience should read each paper before class. You will probably understand the paper that you are presenting better than many of the papers that you are not presenting, but you should also have some idea about what each paper is about and be able to contribute to discussions by asking and helping to answer questions about that day's paper. Some papers will be more difficult to follow than others, but we will try to learn something from each of them.

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1. **Monday, February 10, 2020.** Ge, Huang, Jin, Yuan. Escaping From Saddle Points – Online Stochastic Gradient for Tensor Decomposition. *PMLR* (2015).
   `http://proceedings.mlr.press/v40/Ge15.pdf`

2. **Wednesday, February 12, 2020.** None.

3. **Monday, February 17, 2020.** Belkin, Ma, Mandal. Explaining Deep Neural Networks with a Polynomial Time Algorithm for Shapley Values Approximation. *PMLR* (2019).
   `http://proceedings.mlr.press/v97/ancona19a/ancona19a.pdf`

4. **Wednesday, February 19, 2020.** Krizhevsky, Sutskever, Hinton. ImageNet Classification with Deep Convolutional Neural Networks. *NIPS* (2012).
   `https://papers.nips.cc/paper/4824-imagenet-classification-with-deep-convolutional-neural-networks`

5. **Monday, February 24, 2020. First paper:** Silver, Schrittwieser, Simonyan, Antonoglou, Huang, Guez, Hubert, Baker, Lai, Bolton, Chen, Lillicrap, Hui, Sifre, van den Driessche, Graepel, Hassabis. Mastering the game of Go without human knowledge. *Nature* (2017).
   `https://www.nature.com/articles/nature24270`

Second paper: Poplin, Varadarajan, Blumer, Liu, McConnell, Corrado, Peng, Webster. Prediction of cardiovascular risk factors from retinal fundus photographs via deep learning. *Nature Biomedical Engineering* (2018).
`https://www.nature.com/articles/s41551-018-0195-0`

6. **Wednesday, February 26, 2020.** Hegde, Hipp, Liu, Emmert-Buck, Reif, Smilkov, Terry, Cai, Amin, Mermel, Nelson, Peng, Corrado, Stumpe. Similar image search for histopathology: SMILY. *NPJ Digit. Med.* (2019).
`https://www.nature.com/articles/s41746-019-0131-z`

7. **Monday, March 2, 2020.** Lin, Goyal, Girshick, He, Dollár. Focal Loss for Dense Object Detection. *ICCV* (2017).
`http://openaccess.thecvf.com/content_ICCV_2017/papers/Lin_Focal_Loss_for_ICCV_2017_paper.pdf`

8. **Wednesday, March 4, 2020.** Greff, Srivastava, Koutník, Steunebrink, Schmidhuber. LSTM: A Space Search Odyssey. *IEEE* (2016).
`https://ieeexplore.ieee.org/document/7508408`

9. **Monday, March 16, 2020.** Collobert, Weston, Bottou, Karlen, Kavukcuoglu, Kuksa. Natural Language Processing (almost) from Scratch. *PMLR* (2011).
`http://www.jmlr.org/papers/volume12/collobert11a/collobert11a.pdf`

10. **Wednesday, March 18, 2020.** Wu, Roberts, Datta, Du, Ji, Si, Soni, Wang, Wei, Xiang, Zhao, Xu. Deep learning in clinical natural language processing: a methodical review. *JAMIA* (2019).
`https://academic.oup.com/jamia/advance-article-abstract/doi/10.1093/jamia/ocz200/5651084`

11. **Monday, March 23, 2020.** Devlin, Chang, Lee, Toutanova. BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding. *arXiv* (2019).
`https://arxiv.org/abs/1810.04805`

12. **Wednesday, March 25, 2020.** Soto, Ashley. DeepBeat: A multi-task deep learning approach to assess signal quality and arrhythmia detection in wearable devices. *arXiv* (2020).
`https://arxiv.org/abs/2001.00155`

13. **Monday, March 30, 2020.** Goodfellow, Pouget-Abadie, Mirza, Xu, Warde-Farley, Ozair, Courville, Bengio. Generative Adversarial Nets. *NIPS* (2014).
`https://papers.nips.cc/paper/5423-generative-adversarial-nets`

14. **Wednesday, April 1, 2020** Mnih, Kavukcuoglu, Silver, Rusu, Veness, Bellemare, Graves, Riedmiller, Fidjeland, Ostrovski, Petersen, Beattie, Sadik, Antonoglou, King, Kumaran, Wierstra Legg, Hassabis. Human-level control through deep reinforcement learning. *Nature* (2015).
`https://www.nature.com/articles/nature14236`

15. **Monday, April 6, 2020.** Jan Leike, David Krueger, Tom Everitt, Miljan Martic, Vishal Maini, Shane Legg. Scalable agent alignment via reward modeling: a research direction. *arXiv* (2018).
`https://arxiv.org/abs/1811.07871`