Research Paper Summaries

To expand the number of research papers that we can collectively cover during the course, a number of papers will be presented to the class in the form of written summaries. Each student is responsible for reviewing one paper and contributing a high quality summary that will be shared with the class. This summary counts as part of the *scholarly engagement* component of the course grade. Reviews for papers are due during different modules; often the due date is designed so that the paper is topical for the current material.

Each student will be assigned to one of two groups (A or B). All students are expected to read/view the summaries for their respective group. You are welcome to post questions about summarized papers; if you provide a review, you are expect to respond to posts asking questions about your paper. I may sometimes ask questions about a paper.

Summaries are not to exceed 2 printed pages. The summary should be provided as a PDF attachment to a post which announces the summary by creating a Discussion post titled "Group A/B Paper Summary: PAPER TITLE" (e.g., "Group B Paper Summary: Vandalism Detection in Wikidata"). Include in your announcement post citation information (*i.e.*, authors and title), and if possible a link to where the original paper can be accessed online.

I can provide copies of papers that you are unable to find online. Just email me if you can't find a paper or have a particular question about it.

I have prepared a list of research papers below to choose from. Not every one of these papers will be reviewed. The due date for each review is the **start of the module** given in the leftmost column.

To do by the end of Module 3: Send me an email with a list of your top three (or at most four) choices for a paper to review from the list below. I am normally able to give everyone one of their top three selections. Also, if there is a paper not from the list below that you feel would be a good paper to review for the class, you can include that in your list as well (perhaps giving a rationale for why it is a good choice). If you do not send me your preferred list of three papers by the end of Module 3, I will select a paper for you.

During Module 4 I will contact you with a paper assignment. Also during Module 4 I will post a review of my own, which may serve as a useful example.

To do at or near to the start of the indicated Module for your assigned paper: Create an announcement post on the discussion forum indicating your summary is available. Attach your PDF summary so others can view it.

Your review should cover the following aspects: the project/experiment's goals and motivation; essential review of background material/definitions/prior work; the key technical points and results of the paper; and reasoned criticism (strengths, weaknesses, and/or novel applications of the work). Below is a rubric that I will use to assess the summaries.

Assessment Rubric

	Poor = 0	Fair = 1	Good = 2	Excellent = 3
Writing	The grammar and spelling is bad. Content is poorly organized, too short, or too long.	There are some distracting errors. Could be improved with editing.	Errors are few. Meaning is clear and content is well organized.	Summary is well organized, clear, and free from error.
Motivation	No attempt is made to explain why this paper is important or how it makes a meaningful contribution.	Author's own comments about motivation are repeated verbatim.	Reasonable explanation of why this problem is or is not important, and/or how its results can be applied.	Student clearly understands contribution of paper and impact of the work. May have done background research to appreciate the study.
Background	Unclear how well the student understood important technical background for this paper.	Reasonable attempt to convey important background details to reader.	Salient background material is explained in appropriate detail to reader.	Salient background material is explained in appropriate detail to reader. Evinces effort to make unfamiliar concepts understandable using an economy of space. May show evidence of additional research beyond the current paper.
Technical Detail	The reviewer fails to explain important details of the paper. Key findings may have been missed.	The reviewer understood some of the technical concepts of the paper and conveyed them, but some valuable elements are missing or unclear.	The reviewer understood the important technical details of the paper and these are clearly conveyed.	It is clear that the reviewer understood the important technical details of the paper. Key results and/or subtle observations are articulately explained. Nothing is missed.
Reasoned criticism	Little or no attempt is made to judge the merits of the paper and its impact.	Effort is made to judge the paper. Claims are mainly correct and have a justification.	The paper is judged on multiple dimensions. The review exhibits some non-trivial insights.	The implications of the work, and the strengths and weaknesses of problem, dataset, experimental design, and analysis are well articulated.
Online delivery and response	Review is late, or minimal effort is made to respond to posts about the review.	Review is posted on time. Effort is made to respond to questions about the review.	Review is posted on time. Questions are responded to in a timely fashion, with appropriate responses.	Review is posted on time. Reponses to questions are timely and appropriate. Effort is spent to inform or educate readers about the subject.

Module	Paper	Possible URL for the paper	My comments
5	M. Cartright, J. Allan, V. Lavrenko, and A. McGregor, 'Fast Query Expansion Using Approximations of Relevance Models'. ACM CIKM 2010.	http://maroo.cs.umass.edu/pub/web/getpdf.php?id=943	Trying to make relevance feedback efficient enough for web-scale use.
5	Yilmaz and Aslam, Estimating Average Precision with Incomplete and Imperfect Judgments, CIKM-06, pp. 102-111.	http://goanna.cs.rmit.edu.au/~aht/tiger/p102-yilmaz.pdf	An alternative method to evaluate IR systems instead of average precision
5	Sanderson and Zobel, Information Retrieval System Evaluation: Effort, Sensitivity, and Reliability, SIGIR 2005, pp. 162-169	http://goanna.cs.rmit.edu.au/~jz/fulltext/sigir05.pdf	Statistical significance testing in IR evaluations, and whether more topics, shallowly assessed is a good idea.
5	M. Yamamoto, and K. Church, 'Using Suffix Arrays to Compute Term Frequency and Document Frequency for All Substrings in a Corpus'. Computational Linguistics 27(1), 2001.	http://acl.ldc.upenn.edu/J/J01/J01-1001.pdf	A different form of index based on suffix arrays.
6	Amati and van Rijsbergen, Probabilistic models of information retrieval based on measuring the divergence from randomness, ACM TOIS 20(4):357-389, 2002.	http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.97.8274&rep=rep1&type=pdf	A more theoretical paper about a novel method for computing document similarity.
6	D. Bahle., H. E. Williams, and J. Zobel, 'Efficient Phrase Querying with an Auxiliary Index.' SIGIR-02, pp. 215-221, 2002.	http://eprints.gla.ac.uk/3798/1/3798.pdf	Using extra disk space to speed up phrasal querying. Neat data structures.
6	Dehghani et al., Neural Ranking Models with Weak Supervision. SIGIR 2017	https://arxiv.org/abs/1704.08803	Weak supervision to train NNs for ad hoc ranking.
6	Goodwin et al., BitFunnel: Revisiting Signatures for Search. SIGIR 2017	https://danluu.com/bitfunnel-sigir.pdf	Microsoft paper describing efficiency technique (signatures) with improved accuracy.
7	Heindorf et al., Vandalism Detection in Wikidata, ACM CIKM 2016	https://groups.uni-paderborn.de/fg-engels/publications_pdfs/Konferenzbeitraege/heindorf2016_CIKM.pdf	Best paper winner at CIKM 2016. Significant gains on a benchmark dataset using supervised classifiers.
7	T. Bekhuis and D. Demner-Fushman, Screening nonrandomized studies for medical systematic reviews: a comparative study of classifiers. AI in Medicine 55(3), 2012.	http://www.ncbi.nlm.nih.gov/pubmed/22677493	Applied various supervised machine learning techniques to improve systematic reviews.
7	Piji Li, Zihao Wang, Zhaochun Ren, Lidong Bing, and Wai Lam. Neural Rating Regression with Abstractive Tips Generation for Recommendation. SIGIR 2017	https://arxiv.org/abs/1708.00154	Deep learning approach to collaborative filtering for product reviews.
8	D. Munteanu and D. Marcu, 'Extracting Parallel Sub-Sentential Fragments from Comparable Corpora', ACL 2006.	http://www.isi.edu/~marcu/papers/munteanu-marcu-acl06.pdf	Method to find more data to learn word translations.
8	Gupta et al., Query Expansion for Mixed-Script Information Retrieval, ACM SIGIR 2014	http://research.microsoft.com/pubs/226107/SIGIR_2014_MSIR.pdf	Explores issues when foreign language data is written in Romanized forms instead of the standards writing system.
9	Zhang et al., Relevance Estimation with Multiple Information Sources on Search Engine Result Pages, CIKM 2018	http://www.thuir.cn/group/~YQLiu/publications/CIKM18Zhang.pdf	Using user behavior on complex, heterogenous search engine result pages to infer relevance.
9	I. Vulic and M-F. Moens, Bilingual Word Embeddings from Non-Parallel Document-Aligned Data Applied to Bilingual Lexicon Induction, ACL 2015	http://www.aclweb.org/anthology/P15/P15-2118.pdf	Technique for learning word translations using bilingual word embeddings produced from non-parallel training data.
9	Rekabsaz & Schedl, 'Do Neural Ranking Models Intensify Gender Bias?', SIGIR 2020.	https://arxiv.org/abs/2005.00372	Examining gender bias in IR models.
10	A. Severyn & A. Moschitti, Learning to Rank	http://disi.unitn.it/~severyn/pape	Using word embedding models to

	Short Text Pairs with Convolutional Deep Neural Networks. SIGIR 2015.	rs/sigir-2015-long.pdf	identify semantically similar short text spans (such as sentences).
10	Olga Vechtomova, Noun Phrases in Interactive Query Expansion and Document Ranking, Information Retrieval vol 9, 2006.	http://ov-research.uwaterloo.ca/papers/IR-2006.pdf	Use of noun phrases in query expansion. Nice discussion about the value of phrases in IR.
10	Peter Christen, A Comparison of Personal Name Matching: Techniques and Practical Issues. Technical Report.	http://datamining.anu.edu.au/publications/2006/tr-cs-06-02.pdf	Explores methods to match personal names which are often spelled differently in data bases and texts.
11	Shieh et al., 'Inverted file compression through document identifier reassignment', Information Processing and Management, 39(1), 117-131, 2003.	http://www.sciencedirect.com/science/article/pii/S0306457302000201	An efficiency trick that reduces inverted file size.
11	Khattah and Zaharia, 'ColBERT: Efficient and Effective Passage Search via Contextualized Late Interaction overt BERT'	https://arxiv.org/pdf/2004.12832.pdf	Efficient approach to neural retrieval
11	Martinez et al., Improving search over Electronic Health Records using UMLS-based query expansion through random walks, Journal of Biomedical Informatics, v54, 2014.	http://www.sciencedirect.com/science/article/pii/S1532046414000987	Use of random walks (like PageRank) to find expansion concepts to improve medical search.
11	Moshfeghi et al., Understanding Information Need: An fMRI Study, SIGIR 2016.	http://eprints.gla.ac.uk/118374/	Best paper at SIGIR 2016. Human subjects underwent fMRI while performing a QA task.
12	D. Ravichandran and E. Hovy, 'Learning Surface Text Patterns for a Question Answering System'. ACL 2002.	http://www.isi.edu/natural-language/projects/webclopedia/pubs/02ACL-patterns.pdf	Reducing the need for supervised training in relation extraction
12	Y. Shinyama and S. Sekine. Preemptive Information Extraction Using Unrestricted Relation Discovery. HLT-2006.	http://www.aclweb.org/anthology/N/N06/N06-1039.pdf	A paper on Open IE - an unsupervised type of information extraction
12	Kim et al., Understanding and Modeling Success in Email Search. SIGIR 2017.	https://dl.acm.org/doi/pdf/10.1145/3077136.3080837	Approach to evaluating search methods in email collections.
13	I. Yalniz and R. Manmatha, Finding Translations in Scanned Book Collections, SIGIR 2012	http://130.203.136.95/viewdoc/download;jsessionid=BF0E3A51C814B1E3254C9C8CF4E25F33?doi=10.1.1.367.269&rep=rep1&type=pdf	A novel approach to long document deduplication using longest common subsequences
13	S. Bartlett, G. Kondrak, and C. Cherry, 'On the Syllabification of Phonemes', NAACL 2009.	http://www.aclweb.org/anthology/N/N09/N09-1035.pdf	Deciding how written words are correctly pronounced and where syllable boundaries lie.
13	W. Magdy and K. Darwish, 'Effect of OCR Error Correction on Arabic Retrieval', Information Retrieval 11(5), pgs 405-425, 2008.	http://link.springer.com/article/10.1007%2Fs10791-008-9055-y?LI=true	Working with messy multilingual data.