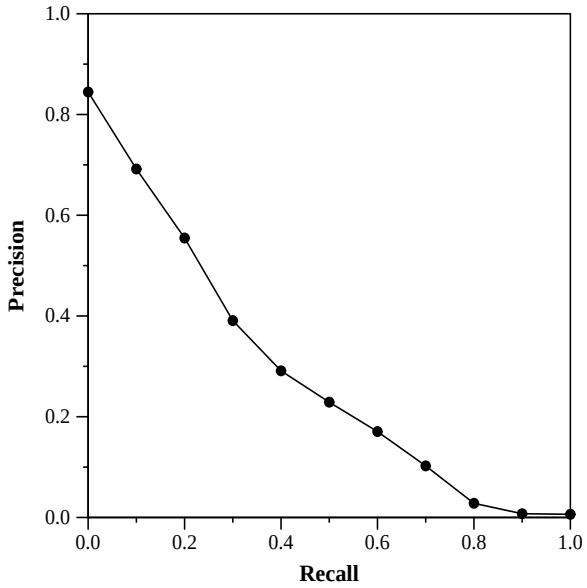
## Deep Learning Track results — (ielab) The University of Queensland

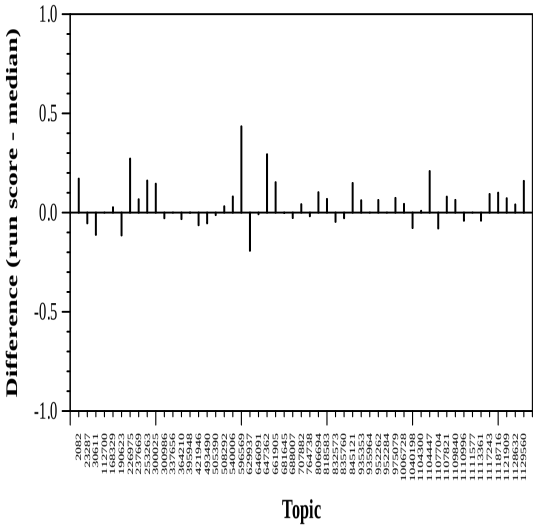
| Run Description | |
|---|---|
| Run ID: | ielab-uniCOIL |
| Task: | Passage Ranking |
| Subtask: | Full ranking from the collection |
| Topic type: | Automatic |
| Single-stage retrieval? | Yes |
| Dense retrieval? | No |
| Used deep nn model? | Pre-trained model |
| Type of training: | Previous year's MS MARCO training data |
| Pre-processing/indexing cost: | requires expanding the original passage collection (append additional tokens to each passage); this process took about 1 hour 40 mins per 2 million passages on a single Tesla v100 16G Gpu, we use 6 gpus for this part, thus it took around 20 hours in total. After expanding the whole collection, uniCOIL required encoding the expanded collection which costs around 40 mins per 2 million passages, we again use 6 gpus to do this. Finally, we used Anserini to indexing the encoded collection which took us around 3.5 hours on a 2018 Mac Mini machine with 3.2 GHz 6-Core Intel Core i7 CPU. |
| Query processing cost: | requires a single BERT inference to process each query, which takes around 40ms per query on GPU. And took 179ms to search the Anserini index per query. |

| Overall measures | |
|---|---|
| Number of topics | 53 |
| Total number retrieved | 5300 |
| Total relevant | 3427 |
| Total relevant retrieved | 1353 |
| MAP | 0.2745 |
| Mean NDCG@10 | 0.6420 |
| Mean Reciprocal Rank | 0.7975 |

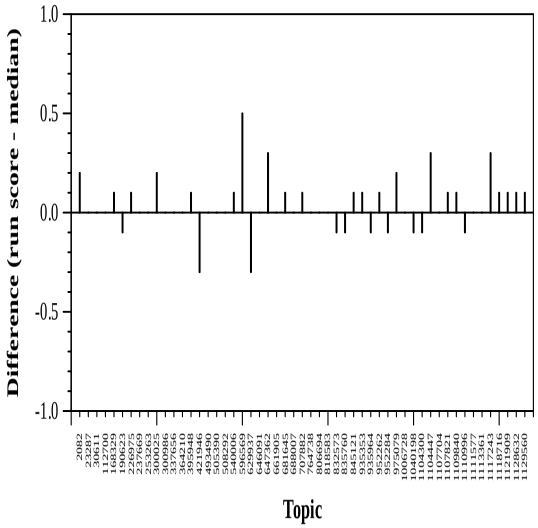
| Document Level Averages | |
|---|---|
| | Precision |
| At 5 docs | 0.5925 |
| At 10 docs | 0.5453 |
| At 15 docs | 0.5119 |
| At 20 docs | 0.4858 |
| At 30 docs | 0.4365 |

| R-Precision | |
|---|---|
| Exact | 0.3354 |

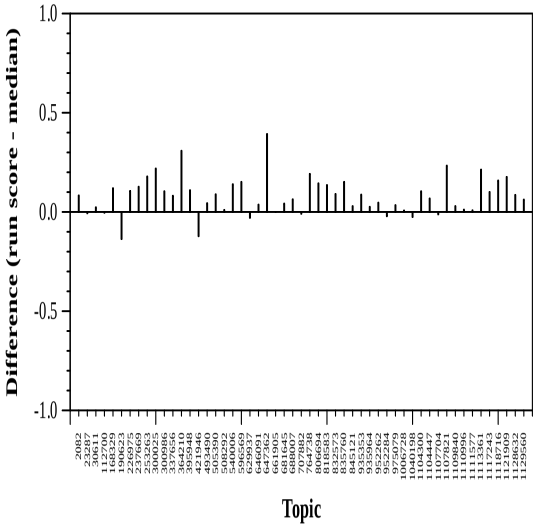




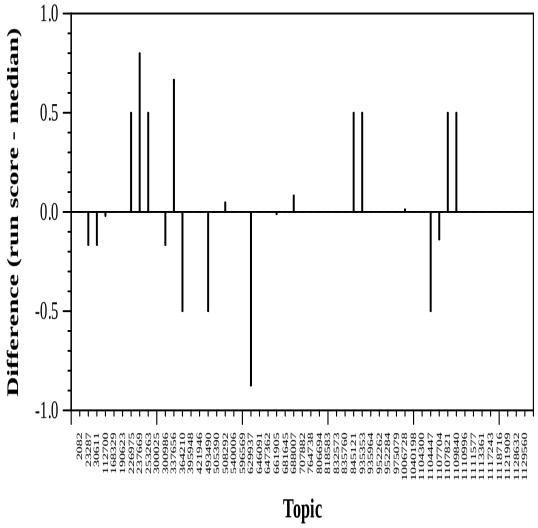

Per-topic difference from median for NDCG@10 for Passage Ranking runs




Per-topic difference from median for Prec@10 for Passage Ranking runs




Per-topic difference from median for Average Precision for Passage Ranking runs




Per-topic difference from median for Reciprocal Rank for Passage Ranking runs