

File Retrieval Engine, Application Layer

Performance Evaluation

Dataset(s)	Worker Thread(s)	Indexing time	Indexing Throughput
Dataset1	1	27.987 s	4.57 MB/s
	2	13.015 s	9.83 MB/s
	4	8.392 s	15.25 MB/s
	8	9.148 s	13.99 MB/s
Dataset2	1	146.668 s	3.29 MB/s
	2	50.694 s	10.10 MB/s
	4	39.464 s	12.98 MB/s
	8	40.307 s	12.71 MB/s
Dataset3	1	737.925 s	2.77 MB/s
	2	474.942 s	4.31 MB/s
	4	418.706 s	4.88 MB/s
	8	339.552 s	6.02 MB/s

Dataset1 configured with 1 worker thread:

Search word: **English**. Search completed in 67.11 seconds.

```
[rpatil5@roub:~/csc-435-pa3-Rohan-Patil-1/app-java$ java -cp target/app-java-1.0-SNAPSHOT.jar csc435.app.FileRetrievalEngine 1
Picked up JAVA_TOOL_OPTIONS: -Xms2g -Xmx8g
***** Choose from the below options to use the File Retrieval Engine application *****
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
|Enter your Option: index /mnt/shared/dataset1
Completed indexing 134200314 bytes of data with 1 worker threads
Completed indexing in 27.987 seconds
Indexing throughput: 4.57 MB/s
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
|Enter your Option: search English
Search results (top 10 out of 218):
* /mnt/shared/dataset1/folder5/folderB/Document10700.txt:178
* /mnt/shared/dataset1/folder2/folderA/Document10350.txt:178
* /mnt/shared/dataset1/folder4/Document10669.txt:131
* /mnt/shared/dataset1/folder7/folderD/Document11039.txt:120
* /mnt/shared/dataset1/folder6/Document10807.txt:119
* /mnt/shared/dataset1/folder3/Document1039.txt:116
* /mnt/shared/dataset1/folder7/folderC/Document11026.txt:91
* /mnt/shared/dataset1/folder3/folderB/Document10474.txt:85
* /mnt/shared/dataset1/folder7/folderB/Document10991.txt:83
* /mnt/shared/dataset1/folder3/Document10387.txt:74
Search completed in 67.11 seconds
```

Dataset1 configured with 2 worker thread:

Search word: **English**. Search completed in 44.48 seconds.

```
[rpatil5@roub:~/csc-435-pa3-Rohan-Patil-1/app-java$ java -cp target/app-java-1.0-SNAPSHOT.jar csc435.app.FileRetrievalEngine 2
Picked up JAVA_TOOL_OPTIONS: -Xms2g -Xmx8g
***** Choose from the below options to use the File Retrieval Engine application *****
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
|Enter your Option: index /mnt/shared/dataset1
Completed indexing 134200314 bytes of data with 2 worker threads
Completed indexing in 13.015 seconds
Indexing throughput: 9.83 MB/s
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
|Enter your Option: search English
Search results (top 10 out of 218):
* /mnt/shared/dataset1/folder5/folderB/Document10700.txt:178
* /mnt/shared/dataset1/folder2/folderA/Document10350.txt:178
* /mnt/shared/dataset1/folder4/Document10669.txt:131
* /mnt/shared/dataset1/folder7/folderD/Document11039.txt:120
* /mnt/shared/dataset1/folder6/Document10807.txt:119
* /mnt/shared/dataset1/folder3/Document1039.txt:116
* /mnt/shared/dataset1/folder7/folderC/Document11026.txt:91
* /mnt/shared/dataset1/folder3/folderB/Document10474.txt:85
* /mnt/shared/dataset1/folder7/folderB/Document10991.txt:83
* /mnt/shared/dataset1/folder3/Document10387.txt:74
Search completed in 44.48 seconds
```

Dataset1 configured with 4 worker thread:

Search word: **English**. Search completed in 47.67 seconds.

```
patil5@roub:~/csc-435-pa3-Rohan-Patil-1/app-java$ java -cp target/app-java-1.0-SNAPSHOT.jar csc435.app.FileRetrievalEngine 4
Picked up JAVA_TOOL_OPTIONS: -Xms2g -Xmx8g
***** Choose from the below options to use the File Retrieval Engine application *****
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
Enter your Option: index /mnt/shared/dataset1
Completed indexing 134200314 bytes of data with 4 worker threads
Completed indexing in 8.392 seconds
Indexing throughput: 15.25 MB/s
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
Enter your Option: search English
Search results (top 10 out of 218):
: /mnt/shared/dataset1/folder5/folderB/Document10700.txt:178
: /mnt/shared/dataset1/folder2/folderA/Document10350.txt:178
: /mnt/shared/dataset1/folder4/Document10669.txt:131
: /mnt/shared/dataset1/folder7/folderD/Document10839.txt:120
: /mnt/shared/dataset1/folder6/Document10887.txt:119
: /mnt/shared/dataset1/folder3/Document1039.txt:116
: /mnt/shared/dataset1/folder7/folderC/Document11026.txt:91
: /mnt/shared/dataset1/folder3/folderB/Document10474.txt:85
: /mnt/shared/dataset1/folder7/folderB/Document10991.txt:83
: /mnt/shared/dataset1/folder3/Document10387.txt:74
Search completed in 47.67 seconds
```

Dataset1 configured with 8 worker thread:

Search word: **English**. Search completed in 49.49 seconds.

```
rpatal5@roub:~/csc-435-pa3-Rohan-Patil-1/app-java$ java -cp target/app-java-1.0-SNAPSHOT.jar csc435.app.FileRetrievalEngine 8
Picked up JAVA_TOOL_OPTIONS: -Xms2g -Xmx8g
***** Choose from the below options to use the File Retrieval Engine application *****
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
Enter your Option: index /mnt/shared/dataset1
Completed indexing 134200314 bytes of data with 8 worker threads
Completed indexing in 9.148 seconds
Indexing throughput: 13.99 MB/s
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
Enter your Option: search English
Search results (top 10 out of 218):
* /mnt/shared/dataset1/folder5/folderB/Document10700.txt:178
* /mnt/shared/dataset1/folder2/folderA/Document10350.txt:178
* /mnt/shared/dataset1/folder4/Document10669.txt:131
* /mnt/shared/dataset1/folder7/folderD/Document11039.txt:120
* /mnt/shared/dataset1/folder6/Document10887.txt:119
* /mnt/shared/dataset1/folder3/Document1039.txt:116
* /mnt/shared/dataset1/folder7/folderC/Document11026.txt:91
* /mnt/shared/dataset1/folder3/folderB/Document10474.txt:85
* /mnt/shared/dataset1/folder7/folderB/Document10991.txt:83
* /mnt/shared/dataset1/folder3/Document10387.txt:74
Search completed in 49.49 seconds
```

Dataset2 configured with 1 worker thread:

Search word: **Sterling**. Search completed in 33.08 seconds.

```
rpatil5@roub:~/csc-435-pa3-Rohan-Patil-1/app-java$ java -cp target/app-java-1.0-SNAPSHOT.jar csc435.app.FileRetrievalEngine 1
Picked up JAVA_TOOL_OPTIONS: -Xms2g -Xmx8g
***** Choose from the below options to use the File Retrieval Engine application *****
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
Enter your Option: index /mnt/shared/dataset2
Completed indexing 536991226 bytes of data with 1 worker threads
Completed indexing in 146.668 seconds
Indexing throughput: 3.49 MB/s
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
Enter your Option: search sterling
Search results (top 10 out of 171):
* /mnt/shared/dataset2/folder3/Document11259.txt:196
* /mnt/shared/dataset2/folder2/Document1085.txt:178
* /mnt/shared/dataset2/folder6/Document13583.txt:29
* /mnt/shared/dataset2/folder1/Document1025.txt:12
* /mnt/shared/dataset2/folder6/Document13660.txt:12
* /mnt/shared/dataset2/folder6/Document13559.txt:10
* /mnt/shared/dataset2/folder4/Document1224.txt:8
* /mnt/shared/dataset2/folder1/Document10386.txt:7
* /mnt/shared/dataset2/folder7/folderD/Document14831.txt:7
* /mnt/shared/dataset2/folder3/folderA/Document11504.txt:5
Search completed in 33.08 seconds
```

Dataset2 configured with 2 worker thread:

Search word: **Sterling**. Search completed in 50.23 seconds.

```
rpatil5@roub:~/csc-435-pa3-Rohan-Patil-1/app-java$ java -cp target/app-java-1.0-SNAPSHOT.jar csc435.app.FileRetrievalEngine 2
Picked up JAVA_TOOL_OPTIONS: -Xms2g -Xmx8g
***** Choose from the below options to use the File Retrieval Engine application *****
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
Enter your Option: index /mnt/shared/dataset2
Completed indexing 536991226 bytes of data with 2 worker threads
Completed indexing in 50.694 seconds
Indexing throughput: 10.10 MB/s
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
Enter your Option: search sterling
Search results (top 10 out of 171):
* /mnt/shared/dataset2/folder3/Document11259.txt:196
* /mnt/shared/dataset2/folder2/Document1085.txt:178
* /mnt/shared/dataset2/folder6/Document13583.txt:29
* /mnt/shared/dataset2/folder1/Document1025.txt:12
* /mnt/shared/dataset2/folder6/Document13660.txt:12
* /mnt/shared/dataset2/folder6/Document13559.txt:10
* /mnt/shared/dataset2/folder4/Document1224.txt:8
* /mnt/shared/dataset2/folder1/Document10386.txt:7
* /mnt/shared/dataset2/folder7/folderD/Document14831.txt:7
* /mnt/shared/dataset2/folder3/folderA/Document11504.txt:5
Search completed in 50.23 seconds
```

Dataset2 configured with 4 worker thread:

Search word: **Sterling**. Search completed in 37.52 seconds.

```
rpatil5@roub:~/csc-435-pa3-Rohan-Patil-1/app-java$ java -cp target/app-java-1.0-SNAPSHOT.jar csc435.app.FileRetrievalEngine 4
Picked up JAVA_TOOL_OPTIONS: -Xms2g -Xmx8g
***** Choose from the below options to use the File Retrieval Engine application *****
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
Enter your Option: index /mnt/shared/dataset2
Completed indexing 536991226 bytes of data with 4 worker threads
Completed indexing in 39.464 seconds
Indexing throughput: 12.98 MB/s
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
Enter your Option: search sterling
Search results (top 10 out of 171):
* /mnt/shared/dataset2/folder3/Document11259.txt:196
* /mnt/shared/dataset2/folder2/Document1085.txt:178
* /mnt/shared/dataset2/folder6/Document13583.txt:29
* /mnt/shared/dataset2/folder1/Document1025.txt:12
* /mnt/shared/dataset2/folder6/Document13660.txt:12
* /mnt/shared/dataset2/folder6/Document13559.txt:10
* /mnt/shared/dataset2/folder4/Document1224.txt:8
* /mnt/shared/dataset2/folder1/Document10386.txt:7
* /mnt/shared/dataset2/folder7/folderD/Document14831.txt:7
* /mnt/shared/dataset2/folder3/folderA/Document11504.txt:5
Search completed in 37.52 seconds
```

Dataset2 configured with 8 worker thread:

Search word: **Sterling**. Search completed in 42.39 seconds.

```
rpatil5@roub:~/csc-435-pa3-Rohan-Patil-1/app-java$ java -cp target/app-java-1.0-SNAPSHOT.jar csc435.app.FileRetrievalEngine 8
Picked up JAVA_TOOL_OPTIONS: -Xms2g -Xmx8g
***** Choose from the below options to use the File Retrieval Engine application *****
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
Enter your Option: index /mnt/shared/dataset2
Completed indexing 536991226 bytes of data with 8 worker threads
Completed indexing in 40.307 seconds
Indexing throughput: 12.71 MB/s
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
Enter your Option: search sterling
Search results (top 10 out of 171):
* /mnt/shared/dataset2/folder3/Document11259.txt:196
* /mnt/shared/dataset2/folder2/Document1085.txt:178
* /mnt/shared/dataset2/folder6/Document13583.txt:29
* /mnt/shared/dataset2/folder1/Document1025.txt:12
* /mnt/shared/dataset2/folder6/Document13660.txt:12
* /mnt/shared/dataset2/folder6/Document13559.txt:10
* /mnt/shared/dataset2/folder4/Document1224.txt:8
* /mnt/shared/dataset2/folder1/Document10386.txt:7
* /mnt/shared/dataset2/folder7/folderD/Document14831.txt:7
* /mnt/shared/dataset2/folder3/folderA/Document11504.txt:5
Search completed in 42.39 seconds
```

Dataset3 configured with 1 worker thread:

Search word: **Evolution**. Search completed in 283.42 seconds.

```
patil5@roub:~/csc-435-pa3-Rohan-Patil-1/app-java$ java -cp target/app-java-1.0-SNAPSHOT.jar csc435.app.FileRetrievalEngine 1
icked up JAVA_TOOL_OPTIONS: -Xms2g -Xmx8g
**** Choose from the below options to use the File Retrieval Engine application ****
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
nter your Option: index /mnt/shared/dataset3
Completed indexing 2144394816 bytes of data with 1 worker threads
Completed indexing in 737.925 seconds
Indexing throughput: 2.77 MB/s
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
nter your Option: search evolution
Search results (top 10 out of 610):
: /mnt/shared/dataset3/folder4/Document1909.txt:276
: /mnt/shared/dataset3/folder1/Document1043.txt:143
: /mnt/shared/dataset3/folder2/folderA/Document14586.txt:106
: /mnt/shared/dataset3/folder7/folderD/Document30134.txt:88
: /mnt/shared/dataset3/folder4/Document19321.txt:74
: /mnt/shared/dataset3/folder2/Document13407.txt:57
: /mnt/shared/dataset3/folder3/folderA/Document17194.txt:53
: /mnt/shared/dataset3/folder2/Document1561.txt:51
: /mnt/shared/dataset3/folder4/Document200.txt:48
: /mnt/shared/dataset3/folder7/folderD/Document30610.txt:42
Search completed in 283.42 seconds
```

Dataset3 configured with 2 worker thread:

Search word: **Evolution**. Search completed in 221.17 seconds.

```
patil5@roub:~/csc-435-pa3-Rohan-Patil-1/app-java$ java -cp target/app-java-1.0-SNAPSHOT.jar csc435.app.FileRetrievalEngine 2
icked up JAVA_TOOL_OPTIONS: -Xms2g -Xmx8g
**** Choose from the below options to use the File Retrieval Engine application ****
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
nter your Option: index /mnt/shared/dataset3
Completed indexing 2144394816 bytes of data with 2 worker threads
Completed indexing in 474.942 seconds
Indexing throughput: 4.31 MB/s
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
nter your Option: search evolution
Search results (top 10 out of 610):
/mnt/shared/dataset3/folder4/Document1909.txt:276
/mnt/shared/dataset3/folder1/Document1043.txt:143
/mnt/shared/dataset3/folder2/folderA/Document14586.txt:106
/mnt/shared/dataset3/folder7/folderD/Document30134.txt:88
/mnt/shared/dataset3/folder4/Document19321.txt:74
/mnt/shared/dataset3/folder2/Document13407.txt:57
/mnt/shared/dataset3/folder3/folderA/Document17194.txt:53
/mnt/shared/dataset3/folder2/Document1561.txt:51
/mnt/shared/dataset3/folder4/Document200.txt:48
/mnt/shared/dataset3/folder7/folderD/Document30610.txt:42
Search completed in 221.17 seconds
```

Dataset3 configured with 4 worker thread:

Search word: **Evolution**. Search completed in 268.23 seconds.

```
rpatil5@roub:~/csc-435-pa3-Rohan-Patil-1/app-java$ java -cp target/app-java-1.0-SNAPSHOT.jar csc435.app.FileRetrievalEngine 4
Picked up JAVA_TOOL_OPTIONS: -Xms2g -Xmx8g
***** Choose from the below options to use the File Retrieval Engine application *****
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
Enter your Option: index /mnt/shared/dataset3
Completed indexing 2144394816 bytes of data with 4 worker threads
Completed indexing in 418.786 seconds
Indexing throughput: 4.88 MB/s
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
Enter your Option: search evolution
Search results (top 10 out of 610):
* /mnt/shared/dataset3/folder4/Document1909.txt:276
* /mnt/shared/dataset3/folder1/Document1043.txt:143
* /mnt/shared/dataset3/folder2/folderA/Document14586.txt:106
* /mnt/shared/dataset3/folder7/folderD/Document30134.txt:88
* /mnt/shared/dataset3/folder4/Document19321.txt:74
* /mnt/shared/dataset3/folder2/Document13407.txt:57
* /mnt/shared/dataset3/folder3/folderA/Document17194.txt:53
* /mnt/shared/dataset3/folder2/Document1561.txt:51
* /mnt/shared/dataset3/folder4/Document200.txt:48
* /mnt/shared/dataset3/folder7/folderD/Document30610.txt:42
Search completed in 268.23 seconds
```

Dataset3 configured with 8 worker thread:

Search word: **Evolution**. Search completed in 228.92 seconds.

```
rpatil5@roub:~/csc-435-pa3-Rohan-Patil-1/app-java$ java -cp target/app-java-1.0-SNAPSHOT.jar csc435.app.FileRetrievalEngine 8
Picked up JAVA_TOOL_OPTIONS: -Xms2g -Xmx8g
***** Choose from the below options to use the File Retrieval Engine application *****
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
Enter your Option: index /mnt/shared/dataset3
Completed indexing 2144394816 bytes of data with 8 worker threads
Completed indexing in 339.552 seconds
Indexing throughput: 6.02 MB/s
-----
Option 1 : Enter Folder path for search : index <FolderPath>
Option 2 : Enter word to search in specified file : search <word_to_search>
Option 3 : Exit the application : quit
-----
Enter your Option: search evolution
Search results (top 10 out of 610):
* /mnt/shared/dataset3/folder4/Document1909.txt:276
* /mnt/shared/dataset3/folder1/Document1043.txt:143
* /mnt/shared/dataset3/folder2/folderA/Document14586.txt:106
* /mnt/shared/dataset3/folder7/folderD/Document30134.txt:88
* /mnt/shared/dataset3/folder4/Document19321.txt:74
* /mnt/shared/dataset3/folder2/Document13407.txt:57
* /mnt/shared/dataset3/folder3/folderA/Document17194.txt:53
* /mnt/shared/dataset3/folder2/Document1561.txt:51
* /mnt/shared/dataset3/folder4/Document200.txt:48
* /mnt/shared/dataset3/folder7/folderD/Document30610.txt:42
Search completed in 228.92 seconds
```