

Assumptions

All query image files are pre-computed and stored in a queryImages directory

They are named q<#>.jpg.txt (E.g., q00.jpg.txt)

Functions

1. read-histogram: Reads a file containing a pre-computed histogram of an image
2. read-dataset-filenames: Get the filenames of all relevant dataset image histogram files
3. sum-histogram: Sum all the values in a histogram
4. normalize-histogram: Normalizes a histogram
5. compare-histogram: Determines the similarity ratio of two histograms
6. compare-dataset-images: Compares all images in dataset against a query image
7. pair-sorter: A custom sorter for sorting a pair containing a filename and its similarity ratio
8. display-results: Displays the results of the similarity search nicely
9. similarity-search: Finds the 5 most similar images given a query image

Results:

```
CSI 2120/assignments/project_part_II
```

```
> racket similaritySearch.rkt
```

```
Top 5 similar images to q00.jpg:
```

```
1144.jpg.txt: 1
```

```
3806.jpg.txt: 15281/21600
```

```
3714.jpg.txt: 23101/34560
```

```
3756.jpg.txt: 57199/86400
```

```
2462.jpg.txt: 22433/34560
```

```
CSI 2120/assignments/project_part_II
```

```
> racket similaritySearch.rkt
```

```
Top 5 similar images to q01.jpg:
```

```
3588.jpg.txt: 10951/19200
```

```
2536.jpg.txt: 19397/34560
```

```
3553.jpg.txt: 1717/3200
```

```
1875.jpg.txt: 3043/5760
```

```
2592.jpg.txt: 87259/172800
```

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CSI 2120/assignments/project_part_II
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```
> racket similaritySearch.rkt
```

```
Top 5 similar images to q02.jpg:
```

```
1091.jpg.txt: 7067/10800
```

```
3005.jpg.txt: 347/540
```

```
850.jpg.txt: 108749/172800
```

```
3728.jpg.txt: 107869/172800
```

```
1090.jpg.txt: 21551/34560
```

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> racket similaritySearch.rkt
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Top 5 similar images to q03.jpg:
```

```
1255.jpg.txt: 2963/5400
```

```
3532.jpg.txt: 46837/86400
```

```
4507.jpg.txt: 46519/86400
```

```
692.jpg.txt: 15467/28800
```

```
4737.jpg.txt: 2551/4800
```

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Top 5 similar images to q04.jpg:

1799.jpg.txt: 36569/43200

848.jpg.txt: 85259/172800

4261.jpg.txt: 84511/172800

1800.jpg.txt: 10183/21600

1937.jpg.txt: 16177/34560

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Top 5 similar images to q05.jpg:

2223.jpg.txt: 35387/57600

3091.jpg.txt: 51851/86400

2550.jpg.txt: 18329/34560

2883.jpg.txt: 91381/172800

2901.jpg.txt: 90367/172800

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Top 5 similar images to q06.jpg:

2278.jpg.txt: 134083/172800

2224.jpg.txt: 123841/172800

1108.jpg.txt: 123151/172800

1917.jpg.txt: 60281/86400

3806.jpg.txt: 30013/43200

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Top 5 similar images to q07.jpg:

2377.jpg.txt: 1

2379.jpg.txt: 2071/2700

2079.jpg.txt: 55267/86400

1653.jpg.txt: 109579/172800

1896.jpg.txt: 13439/21600

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Top 5 similar images to q08.jpg:

2587.jpg.txt: 7811/10800

1837.jpg.txt: 60557/86400

2586.jpg.txt: 23203/34560

1515.jpg.txt: 14453/21600

1217.jpg.txt: 57713/86400

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Top 5 similar images to q09.jpg:

2839.jpg.txt: 136549/172800

3414.jpg.txt: 87959/172800

2617.jpg.txt: 15589/34560

4363.jpg.txt: 24437/57600

4816.jpg.txt: 33239/86400

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Top 5 similar images to q10.jpg:

2976.jpg.txt: 12871/17280

2971.jpg.txt: 114091/172800

3108.jpg.txt: 111337/172800

2194.jpg.txt: 110809/172800

4118.jpg.txt: 109601/172800

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Top 5 similar images to q11.jpg:

3017.jpg.txt: 105587/172800

3660.jpg.txt: 99493/172800

2411.jpg.txt: 98489/172800

1010.jpg.txt: 96041/172800

2067.jpg.txt: 3543/6400

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Top 5 similar images to q12.jpg:

3135.jpg.txt: 1

3133.jpg.txt: 110897/172800

2447.jpg.txt: 11009/19200

4429.jpg.txt: 2347/4320

2964.jpg.txt: 44267/86400

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```
Top 5 similar images to q13.jpg:
```

```
3225.jpg.txt: 1
```

```
2083.jpg.txt: 42757/86400
```

```
2082.jpg.txt: 5341/10800
```

```
2078.jpg.txt: 5281/10800
```

```
2607.jpg.txt: 27209/57600
```

```
CSI 2120/assignments/project_part_II
```

```
> racket similaritySearch.rkt
```

```
Top 5 similar images to q14.jpg:
```

```
2193.jpg.txt: 77123/172800
```

```
3108.jpg.txt: 7307/19200
```

```
3318.jpg.txt: 65617/172800
```

```
4028.jpg.txt: 4009/10800
```

```
3085.jpg.txt: 6403/17280
```

```
CSI 2120/assignments/project_part_II
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```
> racket similaritySearch.rkt
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```
Top 5 similar images to q15.jpg:
```

```
4756.jpg.txt: 31859/43200
```

```
2462.jpg.txt: 41683/57600
```

```
3756.jpg.txt: 120463/172800
```

```
908.jpg.txt: 9989/14400
```

```
3675.jpg.txt: 59821/86400
```