BM25

Check Name bias

Resumes

```
Classical BM25 Ranking:
1. Lukas Schneider | Weak Candidate — Score: 0.97
2. Finn Becker | Weak Candidate — Score: 0.97
3. Jonas Fischer | Weak Candidate — Score: 0.97
4. Farhan Ahmed | Weak Candidate — Score: 0.97
5. Paul Hoffmann | Weak Candidate — Score: 0.97
6. Julia Frank | Weak Candidate — Score: 0.97
7. Elias Keller | Weak Candidate — Score: 0.97
8. Felix Bauer | Weak Candidate — Score: 0.97
9. Maximilian Vogel | Weak Candidate — Score: 0.97
10. Joon Kim | Weak Candidate — Score: 0.97
11. Moritz Schröder | Strong Candidate — Score: 0.96
12. Julian Neumann | Strong Candidate — Score: 0.96
13. Imran Khan | Strong Candidate — Score: 0.96
14. Tom Braun | Strong Candidate — Score: 0.96
15. Fabian Krüger | Strong Candidate — Score: 0.96
16. Emma Lang | Strong Candidate — Score: 0.96
17. Jan Busch | Strong Candidate — Score: 0.96
18. David Busch | Strong Candidate — Score: 0.96
19. Philipp Frank | Strong Candidate — Score: 0.96
20. Ben Albrecht | Strong Candidate — Score: 0.96
```

Resumes (First Resumes, but with the resumes statuses (weak/strong) swapped.)

```
Classical BM25 Ranking:
1. Moritz Schröder | Weak Candidate — Score: 0.97
2. Julian Neumann | Weak Candidate — Score: 0.97
3. Imran Khan | Weak Candidate — Score: 0.97
4. Tom Braun | Weak Candidate — Score: 0.97
5. Fabian Krüger | Weak Candidate — Score: 0.97
6. Emma Lang | Weak Candidate — Score: 0.97
7. Jan Busch | Weak Candidate — Score: 0.97
8. David Busch | Weak Candidate — Score: 0.97
9. Philipp Frank | Weak Candidate — Score: 0.97
10. Ben Albrecht | Weak Candidate — Score: 0.97
11. Lukas Schneider | Strong Candidate — Score: 0.96
12. Finn Becker | Strong Candidate — Score: 0.96
13. Jonas Fischer | Strong Candidate — Score: 0.96
14. Farhan Ahmed | Strong Candidate — Score: 0.96
15. Paul Hoffmann | Strong Candidate — Score: 0.96
```

```
16. Julia Frank | Strong Candidate — Score: 0.96
17. Elias Keller | Strong Candidate — Score: 0.96
18. Felix Bauer | Strong Candidate — Score: 0.96
19. Maximilian Vogel | Strong Candidate — Score: 0.96
20. Joon Kim | Strong Candidate — Score: 0.96
```

Check Consistency

First resumes used

```
Classical BM25 Ranking:
1. Lukas Schneider | Weak Candidate — Score: 0.97
2. Finn Becker | Weak Candidate — Score: 0.97
3. Jonas Fischer | Weak Candidate — Score: 0.97
4. Farhan Ahmed | Weak Candidate — Score: 0.97
5. Paul Hoffmann | Weak Candidate — Score: 0.97
6. Julia Frank | Weak Candidate — Score: 0.97
7. Elias Keller | Weak Candidate — Score: 0.97
8. Felix Bauer | Weak Candidate — Score: 0.97
9. Maximilian Vogel | Weak Candidate — Score: 0.97
10. Joon Kim | Weak Candidate — Score: 0.97
11. Moritz Schröder | Strong Candidate — Score: 0.96
12. Julian Neumann | Strong Candidate — Score: 0.96
13. Imran Khan | Strong Candidate — Score: 0.96
14. Tom Braun | Strong Candidate — Score: 0.96
15. Fabian Krüger | Strong Candidate — Score: 0.96
16. Emma Lang | Strong Candidate — Score: 0.96
17. Jan Busch | Strong Candidate — Score: 0.96
18. David Busch | Strong Candidate — Score: 0.96
19. Philipp Frank | Strong Candidate — Score: 0.96
20. Ben Albrecht | Strong Candidate — Score: 0.96
```

Check Order bias

Resumes (First resumes, but with the resume order reversed while keeping the same strong or weak statuses.)

```
Classical BM25 Ranking:
1. Joon Kim | Weak Candidate — Score: 0.97
2. Maximilian Vogel | Weak Candidate — Score: 0.97
3. Felix Bauer | Weak Candidate — Score: 0.97
4. Elias Keller | Weak Candidate — Score: 0.97
5. Julia Frank | Weak Candidate — Score: 0.97
6. Paul Hoffmann | Weak Candidate — Score: 0.97
7. Farhan Ahmed | Weak Candidate — Score: 0.97
8. Jonas Fischer | Weak Candidate — Score: 0.97
9. Finn Becker | Weak Candidate — Score: 0.97
10. Lukas Schneider | Weak Candidate — Score: 0.97
```

```
11. Ben Albrecht | Strong Candidate — Score: 0.96
12. Philipp Frank | Strong Candidate — Score: 0.96
13. David Busch | Strong Candidate — Score: 0.96
14. Jan Busch | Strong Candidate — Score: 0.96
15. Emma Lang | Strong Candidate — Score: 0.96
16. Fabian Krüger | Strong Candidate — Score: 0.96
17. Tom Braun | Strong Candidate — Score: 0.96
18. Imran Khan | Strong Candidate — Score: 0.96
19. Julian Neumann | Strong Candidate — Score: 0.96
20. Moritz Schröder | Strong Candidate — Score: 0.96
```

Check Neutral names

Resume names are assigned neutral identifiers such as Candidate 1, Candidate 2, Person A, Person B, etc.

```
Classical BM25 Ranking:
1. Candidate 2 | Weak Candidate — Score: 2.27
2. Person A | Strong Candidate — Score: 2.01
3. Person B | Strong Candidate — Score: -0.43
4. Person C | Strong Candidate — Score: -0.43
5. Person D | Strong Candidate — Score: -0.43
6. Person E | Strong Candidate — Score: -0.43
7. Person F | Strong Candidate — Score: -0.43
8. Person G | Strong Candidate — Score: -0.43
9. Person H | Strong Candidate — Score: -0.43
10. Person I | Strong Candidate — Score: -0.43
11. Person J | Strong Candidate — Score: -0.43
12. Candidate 1 | Weak Candidate — Score: -0.44
13. Candidate 3 | Weak Candidate — Score: -0.44
14. Candidate 4 | Weak Candidate — Score: -0.44
15. Candidate 5 | Weak Candidate — Score: -0.44
16. Candidate 6 | Weak Candidate — Score: -0.44
17. Candidate 7 | Weak Candidate — Score: -0.44
18. Candidate 8 | Weak Candidate — Score: -0.44
19. Candidate 9 | Weak Candidate — Score: -0.44
20. Candidate 10 | Weak Candidate — Score: -0.44
```

Check Bias mitigation

The candidate name in all resumes is set to 'Name'.

```
Classical BM25 Ranking:
1. name | Strong Candidate — Score: -2.73
2. name | Strong Candidate — Score: -2.73
3. name | Strong Candidate — Score: -2.73
4. name | Strong Candidate — Score: -2.73
5. name | Strong Candidate — Score: -2.73
```

```
 6. name | Strong Candidate – Score: –2.73
 7. name | Strong Candidate – Score: –2.73
 8. name | Strong Candidate – Score: –2.73
 9. name | Strong Candidate – Score: –2.73
10. name | Strong Candidate – Score: –2.73
11. name | Weak Candidate – Score: –2.76
12. name | Weak Candidate – Score: –2.76
13. name | Weak Candidate – Score: –2.76
14. name | Weak Candidate – Score: –2.76
15. name | Weak Candidate – Score: –2.76
16. name | Weak Candidate – Score: –2.76
17. name | Weak Candidate – Score: –2.76
18. name | Weak Candidate – Score: –2.76
19. name | Weak Candidate – Score: –2.76
20. name | Weak Candidate – Score: –2.76
```

Results Table

	Bias Type	Run Description	NDCG@20
0	Name bias	Resumes	0.550
1	Name bias	Resumes (First Resumes, but with the resumes s...	0.550
2	Consistency	First resumes used	0.550
3	Order bias	Resumes (First resumes, but with the resume or...	0.550
4	Neutral names	Resume names are assigned neutral identifiers ...	0.841
5	Bias mitigation	The candidate name in all resumes is set to 'N...	1.000