Optimization Method for Weighting Explicit and Latent Concepts in Clinical Decision Support Queries

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Objectives

- a
- b

Queries and Explicit and Latent Concepts (Example)

- **Query:** 33-year-old male presents with severe abdominal pain one week after a bike accident, in which he sustained abdominal trauma. He is hypotensive and tachycardic, and imaging reveals a ruptured spleen and intraperitoneal hemorrhage
- **Explicit concepts:** "bike accident", "abdominal trauma", "tachycardia", "splenic rupture", "intraperitoneal hemorrhage"
- **Latent concepts:** "splenic trauma", "Injury of spleen", "Traffic accidents"

b

1. a
2. b

a

a

a

a

Important Result

Results

Best	0.3109	Best	0.3109
Median	0.2689	Median	0.2504
Mean	0.2506	Mean	0.2496

Wayne State Univ.	0.3109	description
Northwest./Utah/UNC	0.3019	summary
Univ. of Michigan	0.2954	summary
Fudan Univ.	0.2689	description
Demo. Univ. of Thrace	0.2318	summary

Figure 1: Task A-Manual

Best	0.2939	Best	0.2939
Median	0.2120	Median	0.2288
Mean	0.1973	Mean	0.2099

Wayne State Univ.	0.2939	description
Luxembourg IST	0.2894	summary
Univ. of Cambridge	0.2823	summary
East China Normal U.	0.2680	summary
Univ. of Delaware	0.2676	summary

Figure 2: Task A-Automatic

Best	0.3809	Best	0.3809
Median	0.3208	Median	0.3212
Mean	0.2717	Mean	0.2842

Fudan Univ.	0.3809	description
Wayne State Univ.	0.3690	description
Univ. of Michigan	0.3535	summary
Northwest./Utah/UNC	0.3255	summary
Harbin Inst. of Tech.	0.3168	summary

Figure 3: Task B-Manual

Conclusion

a

References

[1] Saeid Balaneshin-kordan and Alexander Kotov. Sequential query expansion using concept graph. In *Proceedings of the 25th ACM International Conference on Information and Knowledge Management*, pages 155–164. ACM, 2016.