

Characterizing Question Facets for Complex Answer Retrieval

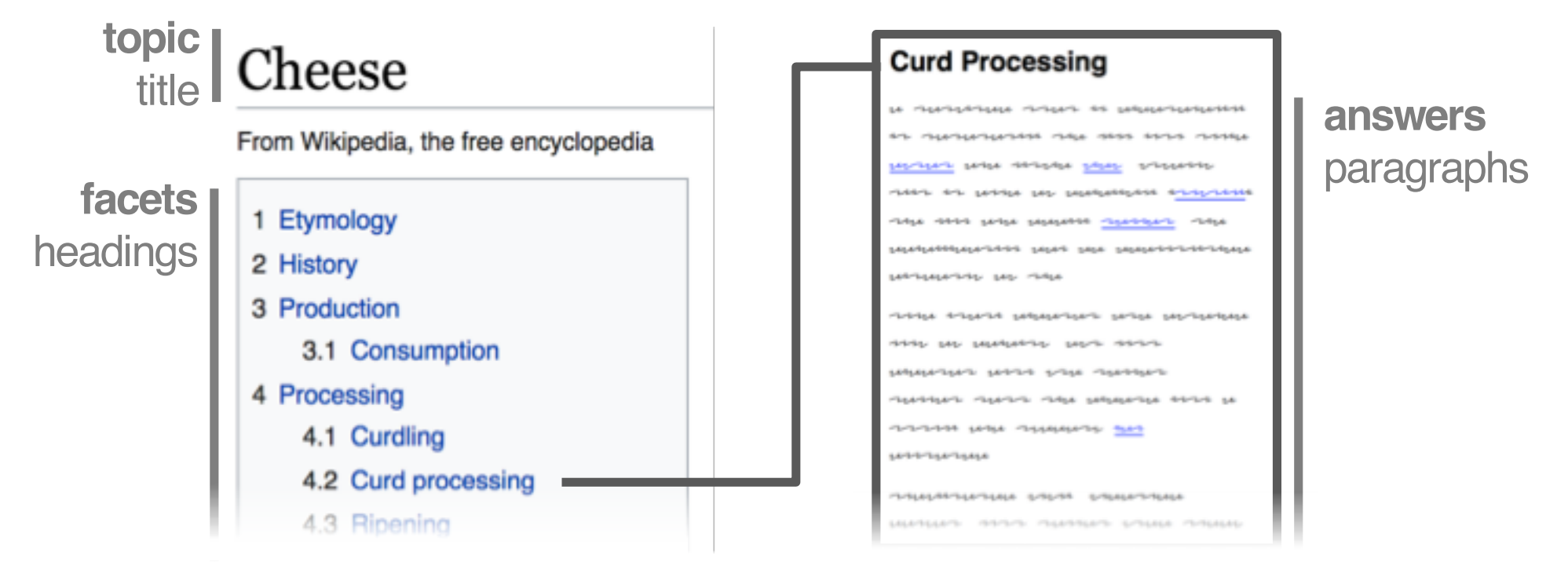
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People search for complex answers.



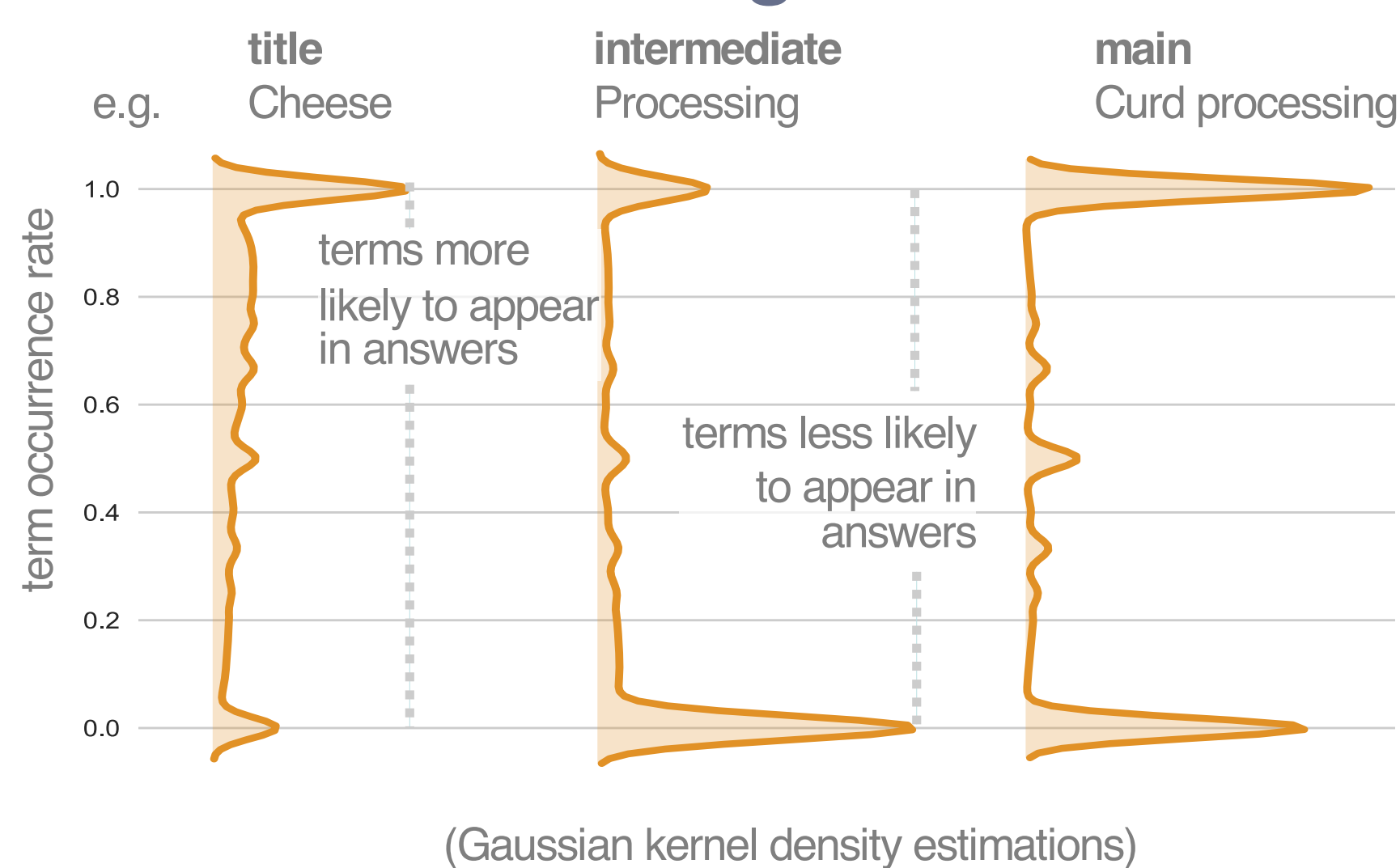
complex answers Although nutrient levels vary by type of cheese, most cheese are a rich source of calcium, protein, and sodium. Because the primary ingredient of cheese is milk, most of most of the nutritional content Consumption of foods that are high in saturated fat such as cheese are linked with an increase risk of cardiovascular disease. This is due to adverse effects to blood lipids and cholesterol circulates in the Cheese has the potential for promoting the growth of Listeria bacteria. This can cause serious infection in an infant and pregnant woman and can be transmitted to her infant in utero or after. The

Wikipedia can serve as a complex answer dataset.

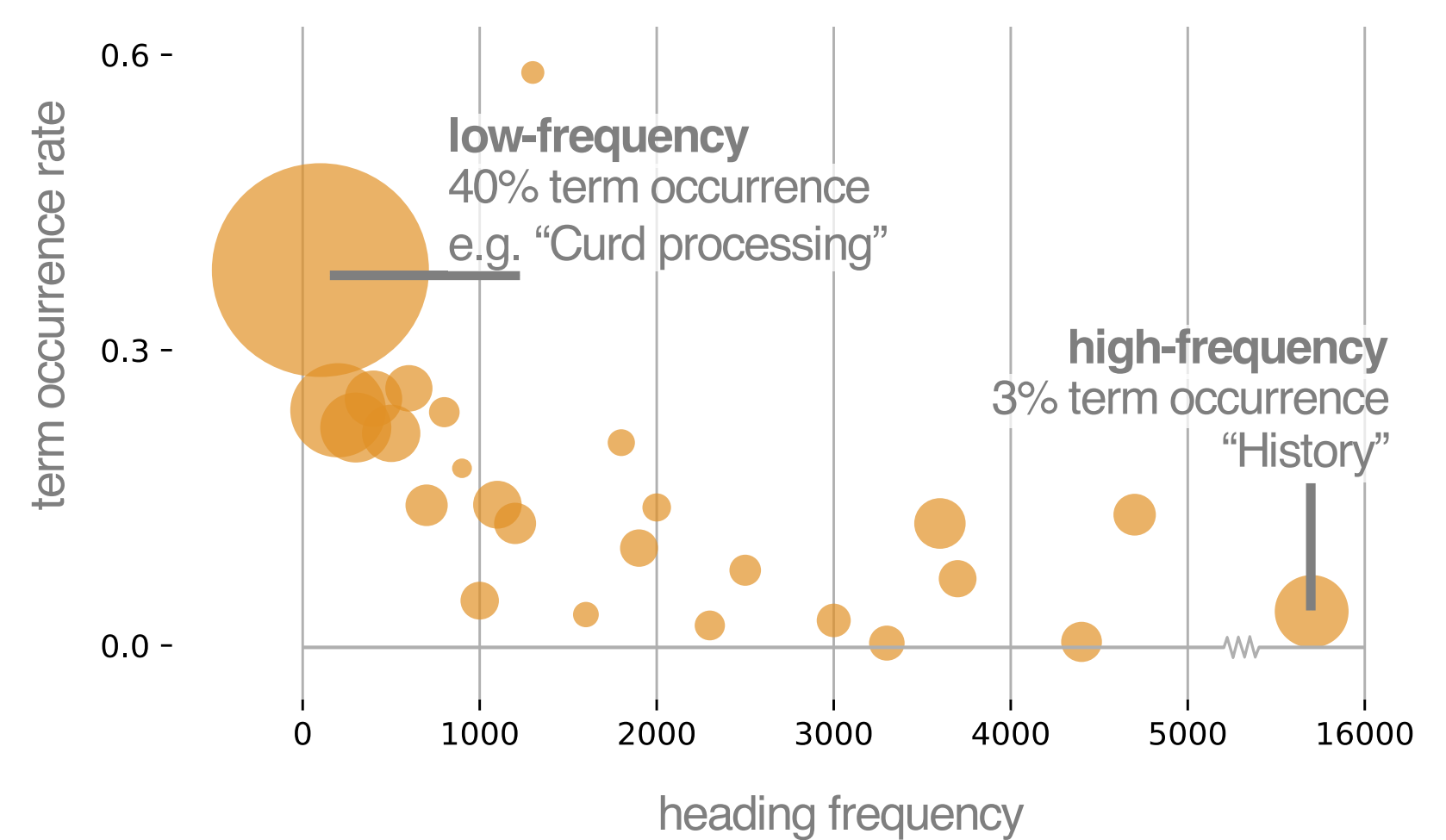


Laura Dietz, Ben Gamari. "TREC CAR: A Data Set for Complex Answer Retrieval". Version 1.5, 2017.

Titles are likely to appear in answers. Intermediate headings are not.



Headings that appear frequently are less likely to appear in answers.



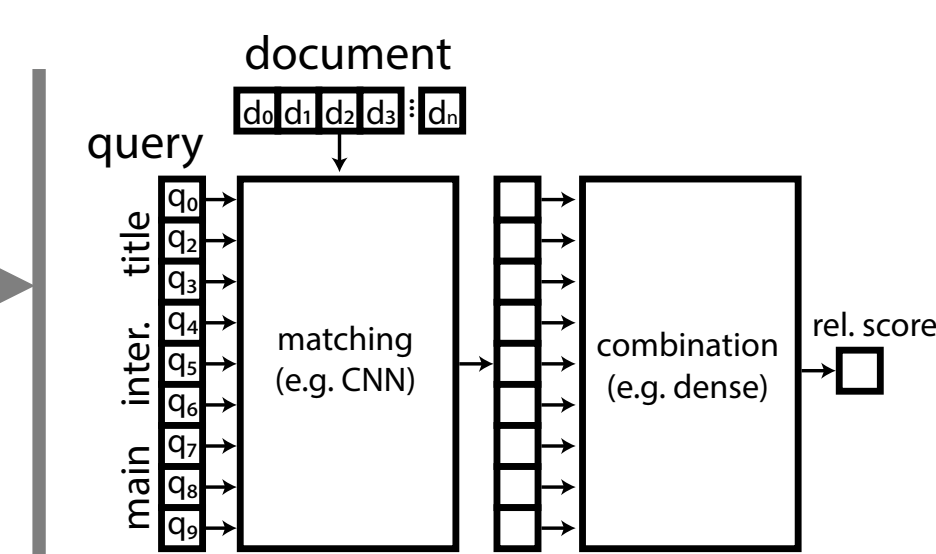
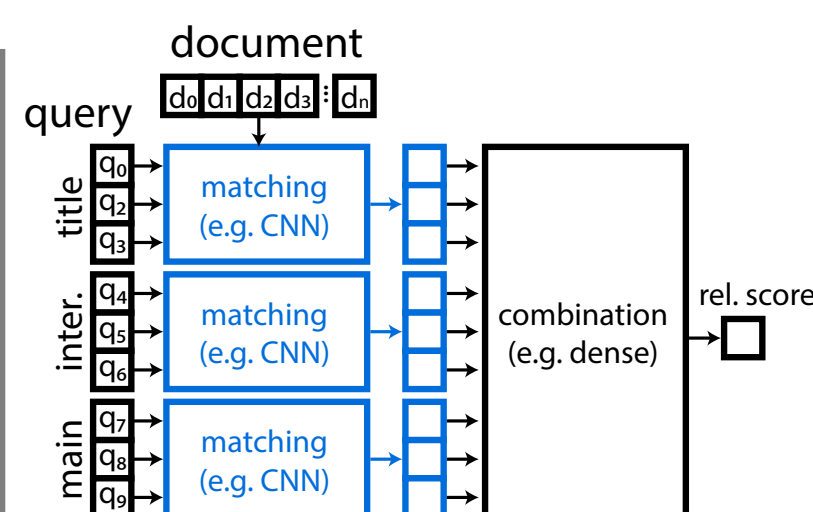
Incorporating these facet characteristics into neural IR models improves performance.

Model	R-Prec	MAP
BM25	0.10	0.12
Siamese attn.	0.10	0.12
Sequential dep.	0.12	0.15
PACRR	0.13	0.16
PACRR + CV	0.13	0.17
PACRR + HI	0.14	0.17
PACRR + HI + CV	0.15	0.18

HI: Heading Independence
 separate matching by heading position

Matching is conducted separately for each heading position (title, intermediate, main).

This aligns the output positions (e.g., so headings are always at the same position) and allows model to learn different matching rules for each position.



Neural ranking architecture
 generalized, interaction-focused

e.g., DRMM, MatchPyramid, PACRR, DeepRank

Matching (e.g., CNN over term similarity matrix), then combination (e.g., dense).

CV: Contextual Vectors
 include facet characteristic scores

By default, PACRR includes IDF

We include 2 additional scores:
 - heading position: one-hot
 - heading frequency: stratified

The model learns to combine these scores with matching scores to produce the final relevance score.

This improves results because heading position and heading are signals for how important each term.

