CSCI572 - 20231 - I...

Final exam

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Edit questions

Preview assessment

Any modifications you make will be updated live. Students will not receive any notifications of the changes. You will not be able to add or delete questions after the assessment has been distributed to students.

Assignment description (optional) **Edit** Preview

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Hi! OMG - here's your "final" exam for CS572...

Note - the test is completely open (notes, Google, ChatGPT...)!! *BUT* you will lose points (even get a 0) if you blindly copy and paste answers from websites, ChatGPT, etc!! In other words, you HAVE to write answers using your OWN WORDS.

You need to provide *precise* answers to the questions - writing "too much" (and arguing that the right answer is "in there somewhere" will get you a 0 - in terms of search engines, this would be the equivalent of 'low precision'!).

You can type your answers directly into the textbox that is below each question.

There are 18 questions below, but you only need to answer 13:
* you MUST answer the 4-point questions, there are 4 of them (4*4=16)

* you can CHOOSE any 9, from the remaining 14, each is worth 1 point

Q1 Text answer question

1 point

When we upload pics/clips/songs... to social media, **what specific mechanism** to we use, to help others find our content when they search?

Why do we need this specific mechanism?

Q2 Text answer question

1 point

What algorithms causes/leads to/results in/is implicated in... **'filter bubbles'**?

How does it lead to this?

Q3 Text answer question

1 point

What TWO other items can a search engine serve us (eg. via 'snippets'), in addition to what gets served already? Name each item, and briefly state why it would be of use to us.

Q4 Text answer question

1 point

As you know, genAI (generative AI) is so-called because it can generate

content (text, images, video, audio, more).

HOW will this adversely affect search in the (near, even) future? Explain carefully (don't write a vague answer!).

Q5 Text answer question

1 point

ChatGPT (for example) is said to "hallucinate" sometimes (or a lot of times, depending on the type of questions) - an unfortunate term (because only minds can hallucinate!) used by companies who serve this kind of AI products (eg. https://fortune.com/2023/04/17/google-ceo-sundar-pichai-artificial-intelligence-bard-hallucinations-

unsolved/). This means that the bot provides an incorrect answer (which we can verify using our own knowledge or experience or by doing a good old search!).

WHAT mechanism (in the algorithm) causes this to happen? Please be specific.

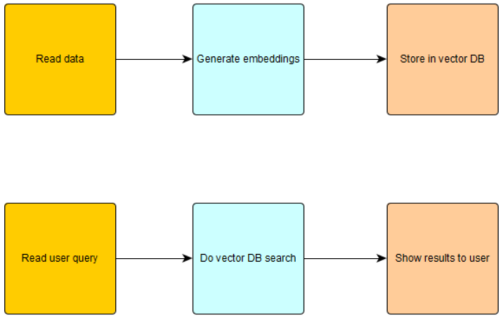
Q6 Text answer question

1 point

We typically write code (eg for your HWs #2 to #5) to make use of IR algorithms.

An alternative way is to use 'nodes' (a node is a box-like representation that encapsulates a specific task by executing that task's code) and WIRE them up visually, like so (see

for example, https://www.google.com/search?q=rapidminer+dataflow&tbm=isch):



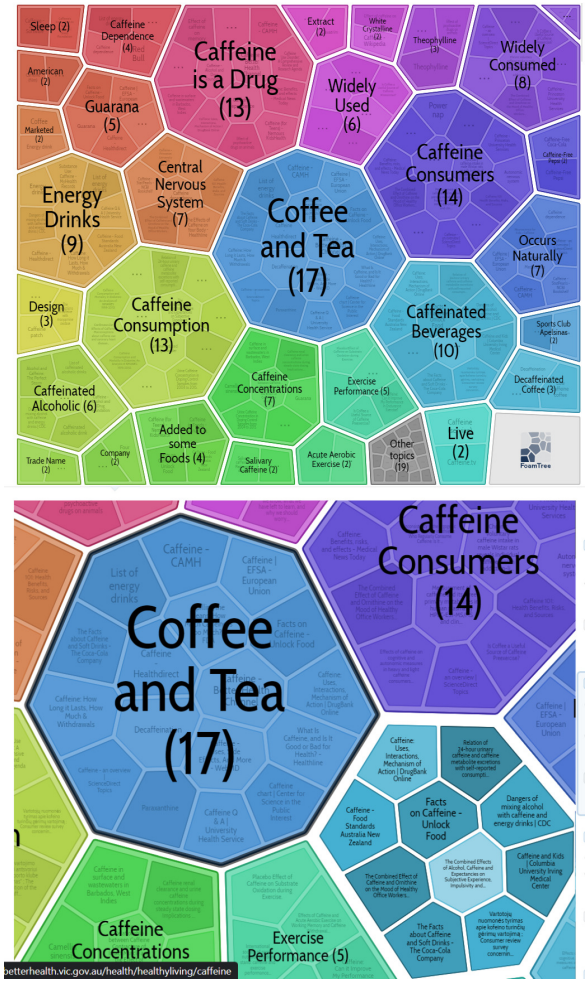
WHAT would be TWO specific (and different from each other) advantages of switching to this way of working (using nodes, as opposed to coding)?

Q7 Text answer question

1 point

Consider the diagram below (the bottom part is simply a slightly

zoomed-in portion of the top):



What algorithm did we study, that results in such a collection of polygons?

Why is each polygon convex?

Q8 Text answer question

1 point

We have revisited this diagram (at https://bytes.usc.edu/cs572/s23-sear-chhh/home/index.html) on and off, many times:

Now that the course is over (after you get through this exam, lol), how does it summarize (encapsulate) the course? **Pick four specific and different IR tasks** we studied during the course (including during the 'Assorted topics' pair of lectures), and explain (in a line or two) each, in terms of the three pieces of our diagram.

Q9 Text answer question

4 points

1+1=2 points: **How** do recommendation engines (REs) work?

1+1=2 points: **What** are two different uses for them when we search?

Q10 Text answer question

1 point

What is 'vector similarity search'? Rather than Googling on ChatGPT-ing, answer, based on what we covered.

For **what two different** IR tasks are vector DBs useful? Name, and

explain briefly why we couldn't do them without vector DBs.

Q11 Text answer question

1 point

Summarize ANY TWO of your HWs #2 through #5 - **WHAT was the algorithm** underlying, **WHAT task** did it help accomplish?

Q12 Text answer question

1 point

What does 'OPL' stand for, in OPL stack?

What is its main use? Again, stick to what we covered, rather than

searching online!

Q13 Text answer question

1 point

How do 'RDF triples' make search better? Explain in a few lines.

Q14 Text answer question

4 points

Name four algorithms we looked at, for IR tasks, that rely on iteration or recursion. For each, **explain briefly, how** the iteration or recursion helps (ie. what changes during each run).

Q15 Text answer question

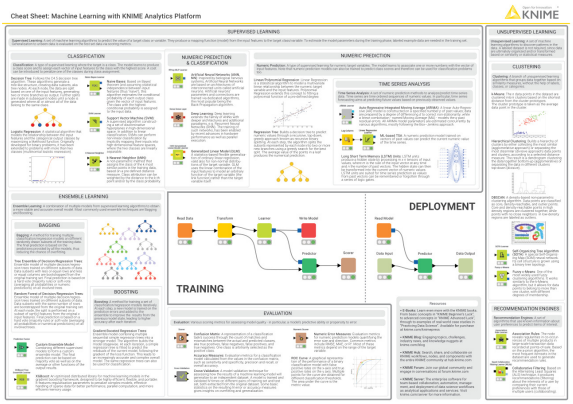
4 points

Name, and very briefly discuss 4 ML-based algorithms we looked (towards the end of the course!), for IR tasks.

Q16 Text answer question

4 points

Consider the following summary of ML/DS algorithms (https://bytes.usc.edu/cs572/s23-sear-chhh/extras/docs/KNIME_ML_cheatsheet.pdf):



Of the various algorithms listed above, **pick FOUR** that are useful in IR [we studied them], and explain briefly how each works: **what** does the algorithm do, **what IR task** does it help with.

Q17 Text answer question

1 point

TikTok's recommendation engine uses a specific data structure, to optimize how it works. **What** is the name of the data structure? In your

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own words, **how** does it work (you can explain a high level, no need for specifics)?

Q18

Text answer question

Points 1

Question **Edit** Preview

Given two vectors (eg like shown below), **what two** 'similarity measures' can we calculate ?

What do vectors have to do, with IR in the first place?!

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Bonus

Add another question