askGod Hack2021

Question & Scripture Representations with Matching

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The Challenge

- People have questions, but don't know God has answers for them, or they don't know how to find those answers in the Bible

- How to represent a user's question, what are they really asking?

- How to represent a Scripture passage, what is it really talking about?

- Matching those two

What We Did

- Enlisted the help of $J_a$son and his pet Python

- Defined two data structure objects, one to for questions, one for verses

- Filtering algorithm - sequence of "filters" which each compare certain parts of the two data structures to each other, scoring the verses that most closely match.
  - The sum of scores from all filters is added in the end.
  - Verses with the highest score are the answer to their question

- Parsing questions and passages into these formats is daunting and difficult - hard code the data
  - Assume those pieces are handled, and just focus on the structure and the matching

The Data (Question Context)

```json
{
        "question-text": "Does the Bible say it is a sin to cry?",

        "significant-words": [ "Bible", "sin", "cry" ],

        "relates-to": [],

        "scripture-section" : "Both",

        "emotions": [ "confusion" ],

        "preconceptions": [ "legalistic", "not meaningful" ],

        "people": [],

        "places": [],

        "actions": [ "say", "cry" ],

        "believer" : false,

        "question-type" : {
           "type": "clarification",

           "subject": "crying",

           "action": [ "sinful", "wrong" ]
        },

        "verse-in-the-question" : ""

}
```

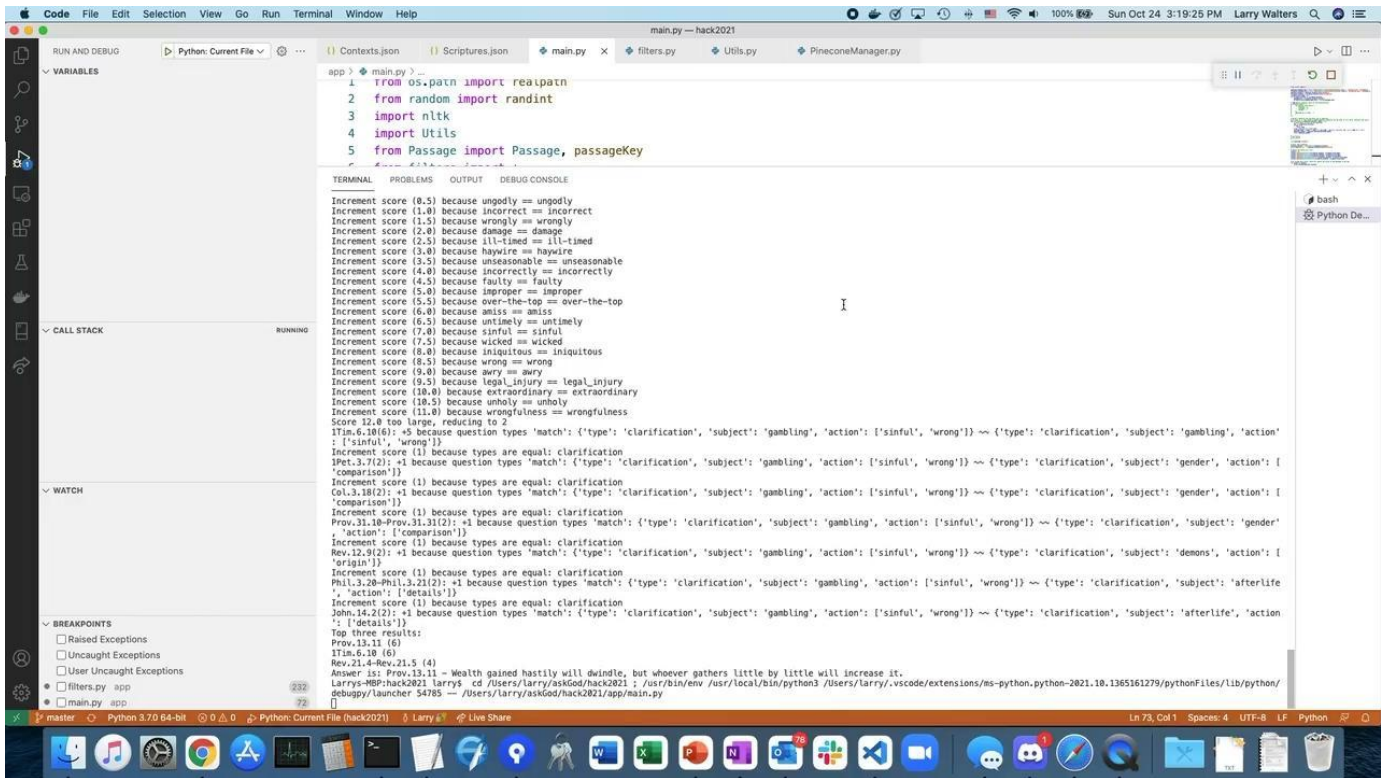# The Data (Passage Context)

```
{
    "passage": "Rev.21.4-Rev.21.5",
    "scripture-section": "NT",
    "applies-to": {
        "general": ["believer", "unbeliever"],
        "family-relation": [],
        "occupation": []
    },
    "questions": [ "Does the Bible say it is a sin to cry?", … ]
    "question-types": [
        {
            "type": "clarification",
            "subject": "crying",
            "action": ["sinful", "wrong"]
        }
    ],
    "people": ["God"],
    "places": ["throne", "heaven"],
```

```
    "actions": ["wipe every tear", "crying", … ],
    "lesson": {
        "situation": "sadness",
        "godly-response": [
            "God cares",
            "There won't be grief in heaven",
            "God makes everything new"
        ],
        "worldly-response": [
            "hide it inside",
            "isolate yourself",
            "self-medicate with pleasures"
        ],
        "believer": "both"
    }
}
```

Some Examples of Filters

- People / Places / Actions
  - `"people" : [ "Moses", "Jesus" ]  < ----- > "people" : [ "Jesus" ]`
- Scripture Section
  - If question seems to be about OT, and the passage is in the NT, decrease the score, and vice versa
- Question Similarity (combo filter)
  - Search for significant words in associated questions:
    - `"significant-words" : [ "rise", "dead", "third day" ] ----->`
      `"questions" : [ "Did Jesus rise from the dead?" ]`
  - Do similarity search on associated questions with new question as input query (didn't get to implement yet)
- And More...

Demo

Benefits

- Much richer way to understand what a passage is talking about. Previous model was based on topics to verses

- Better understanding of a question, not simply keyword based or a vector of words passed into a model

- Filters are extensible and scalable, also have sub-filters - can be easily expanded

Results & Next Steps

- Didn't have time to implement all the filters and do adequate testing

- Continue to build and improve filters / algorithm

- Figure out how to parse questions and passages into these formats
  - Combination of hard-coding and automation

- Integrate with existing website