

IBM Watson Tutorbot

Final Presentation

Topics

1. Preliminary considerations
2. Speech Recognition
3. Tutorbot
4. Tutorbot - Structure
5. Tutorbot - Demonstration

1. Preliminary considerations

- seminar goal: building a question answering system
- different ideas in seminar discussion:
 - applications working with databases
(personal database, nutrition calculation)
 - text recognition / document conversion applications
(medical report, legal advice)
 - chatbots with dialogue service
(language learn assistant; study program advisor)
 - **-> our application: speech-to-text service & concept insights service**

1. Preliminary considerations

- first idea: Tutor Bot (Watson as a tutor asks questions about lecture videos)
- **-> our application:**
combining Tutor Bot & Lecture Video Parser
- goal: making lecture videos searchable for user questions

2. Speech Recognition

- IBM Speech-to-Text
 - Supports a variety of languages (no German)
 - Offers FLAC, PCM and WAV support
- CMU Sphinx
 - Open source, offline
 - PocketSphinx for embedded systems (i. e. ARM architecture)
- Microsoft Bing Speech API

language-Country	language-Country	language-Country	language-Country
ar-EG*	en-IN	fr-FR	pt-BR
ca-ES	en-NZ	it-IT	pt-PT
da-DK	en-US	nb-NO	sv-SE
de-DE	es-ES	nl-NL	ru-RU
en-AU	es-MX	ja-JP	zh-CN
en-CA	fi-FI	ko-KR	zh-HK
en-GB	fr-CA	pl-PL	zh-TW

2. Speech Recognition

- Combined functionality in *SpeechRecognition* module for Python

```
Could not request results from Google Speech Recognition service; recognition connection failed: [Errno 32] Broken pipe
```

```
Could not request results from Wit.ai service; recognition request failed: Internal Server Error
```

```
Could not request results from Microsoft Bing Voice Recognition service; recognition request failed: Service Unavailable
```

2. Improvements for Speech Recognition

- Quality of transcript depends on:
 - Resolution of input file (16 bit, 32bit, kbit/s)
 - Background noise (especially lecture start and end)
 - Microphone setup
 - Speaker's pronunciation (accents, dialects)
- > Difficulties for Speech Recognition software

Improvements?

- Creating an optimal foundation

3. Tutorbot

Tutorbot

“Make lecture videos searchable”

Tutorbot

Speech to Text

Concept Insights

IBM Bluemix

3. Tutorbot

Userquery, e.g. "exam"



Tutorbot

Write your query here...

Submit



```
*****  
Lecture video: pr23.json  
Concept: Test (assessment)  
*****
```

[00:00:19]

of love we have for this semester an oral exam although we have so many applications beyond not sure if people have that in the future but this year it will be an oral exam for sure and you can register for the oral examination and our secretary's office and there are different appointments away able so %HESITATION depending on the dates that you pick for your oral examination you may either end up with stuff on Staten as %HESITATION the examiner or the office or on a guy as the examiner

3. Tutorbot

Current features

- Relevant sentences
- Videonumber
- Position in the video

Further possibilities:

- Link to the corresponding video
- Link to corresponding Wikipedia-page (from within API)
- Lecture slides
- Wikipedia-abstract (from within API)
- Additional data from Babelnet
- Additional data from public corpora inside the Concept Insights API

3. Tutorbot

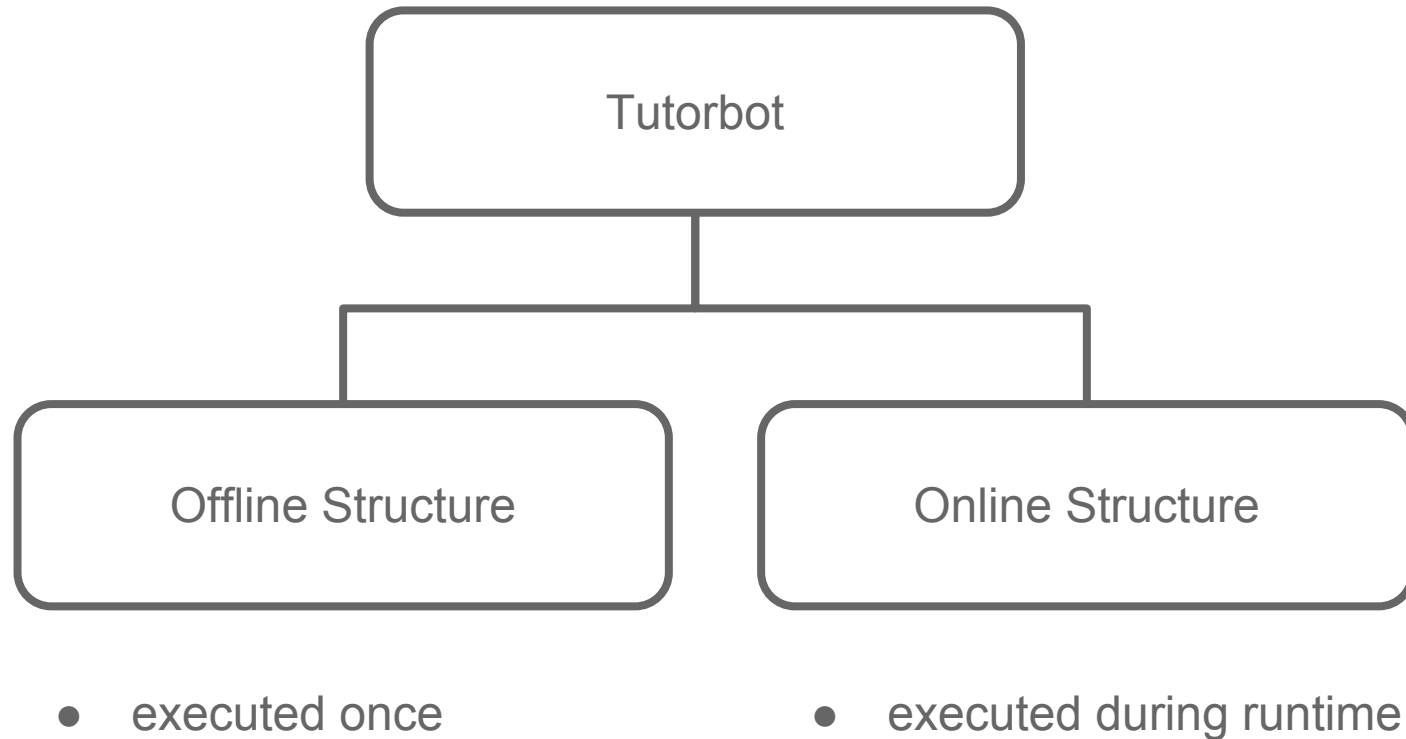
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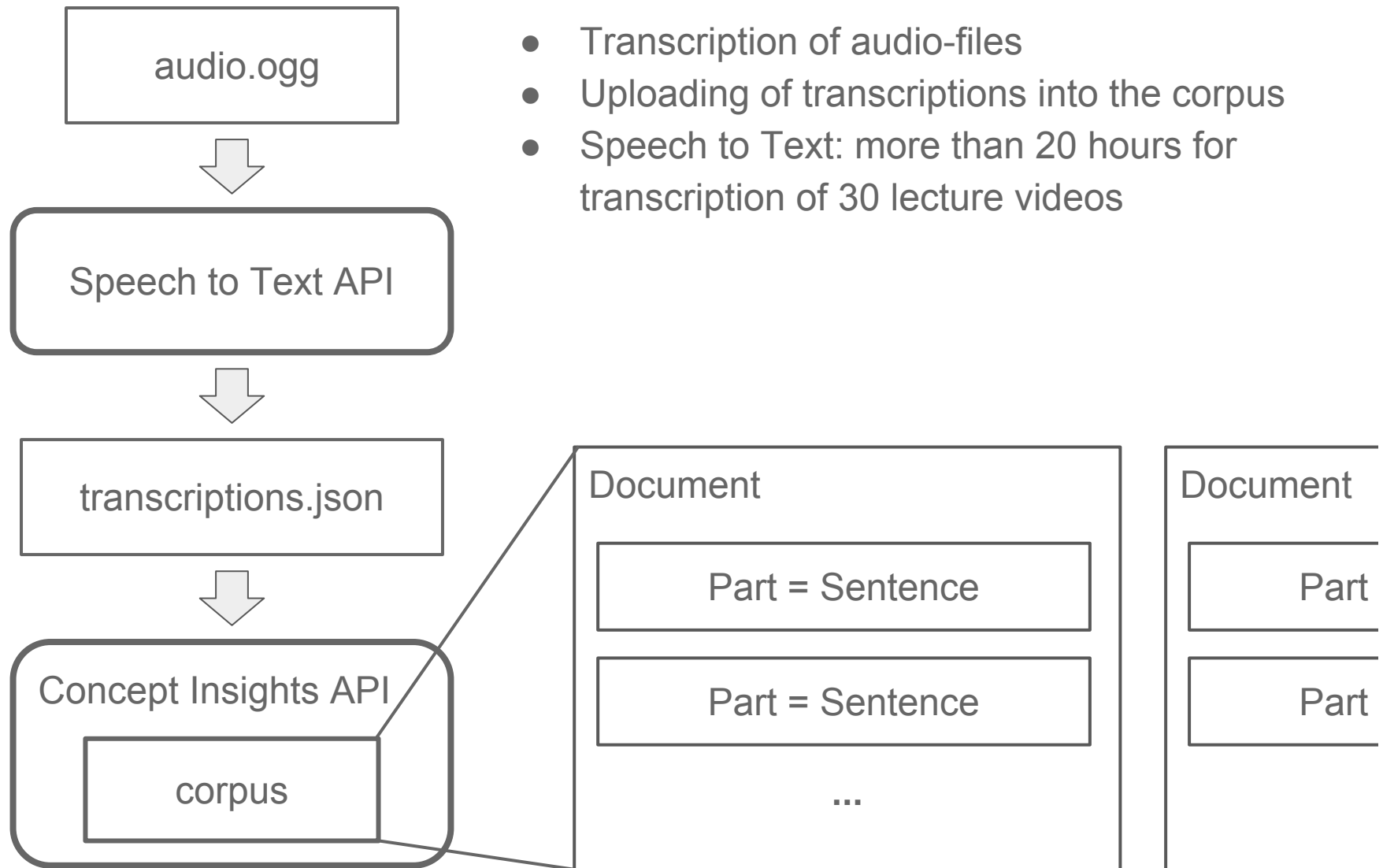
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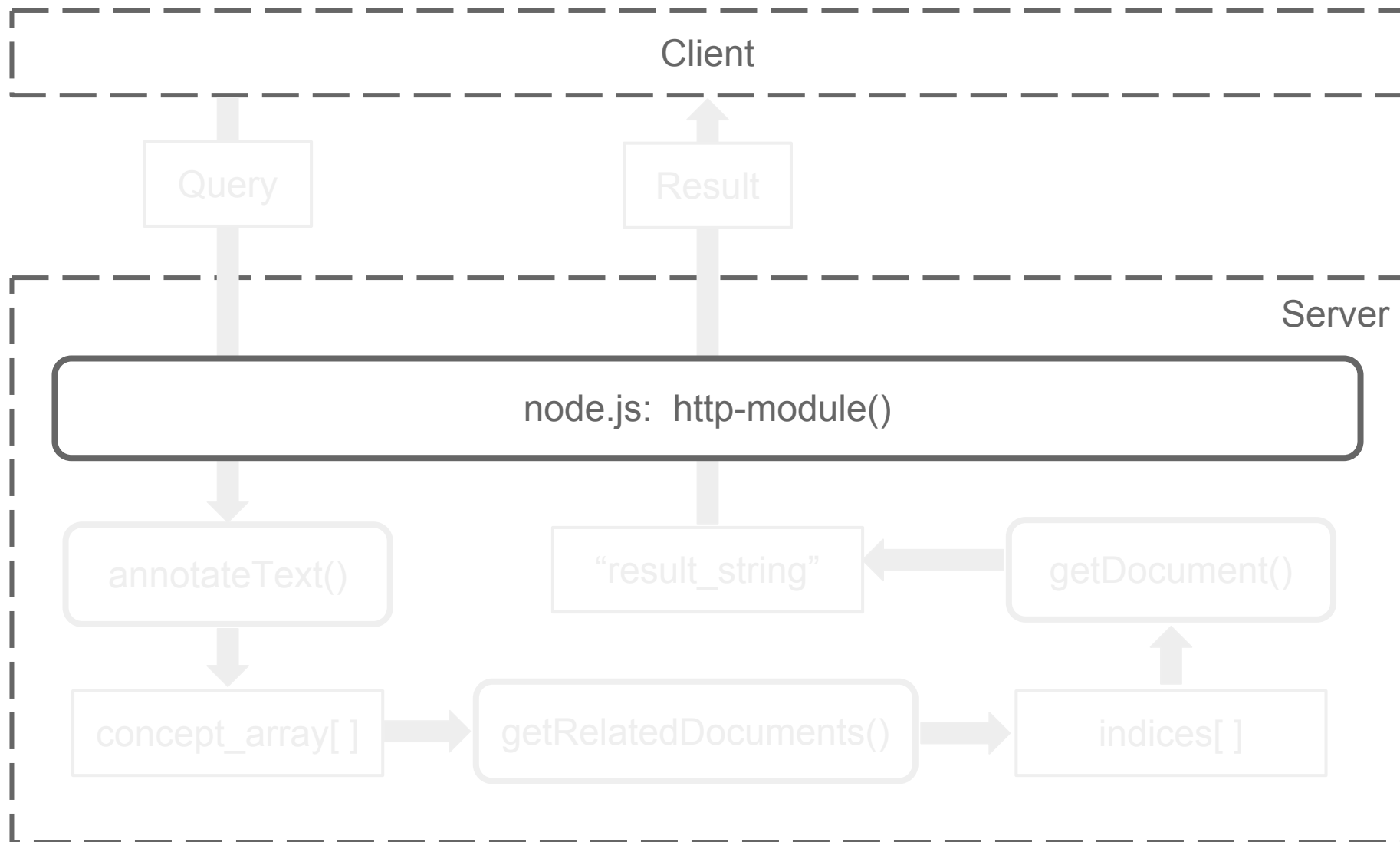
4. Tutorbot - Structure



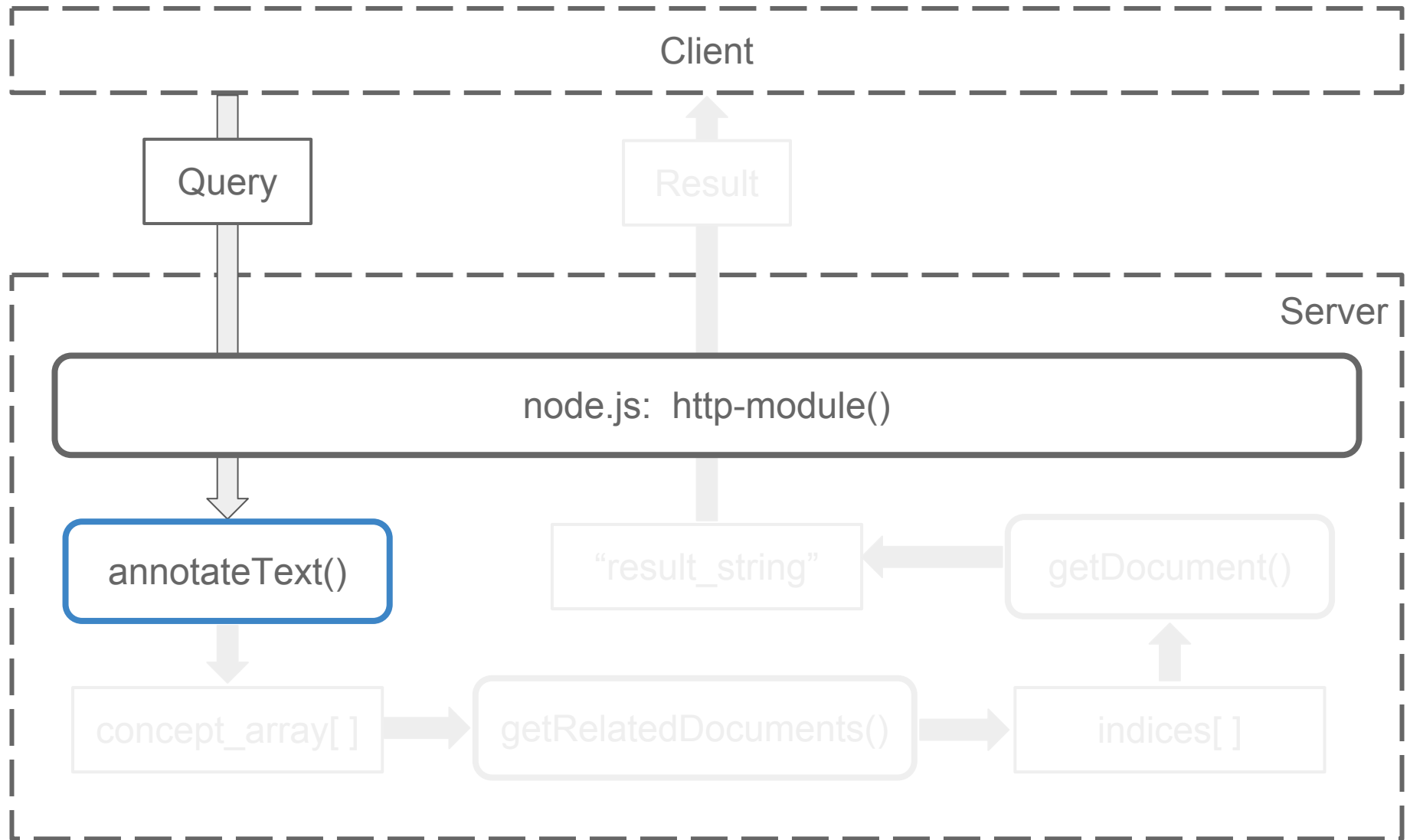
4.1. Tutorbot - Offline Structure



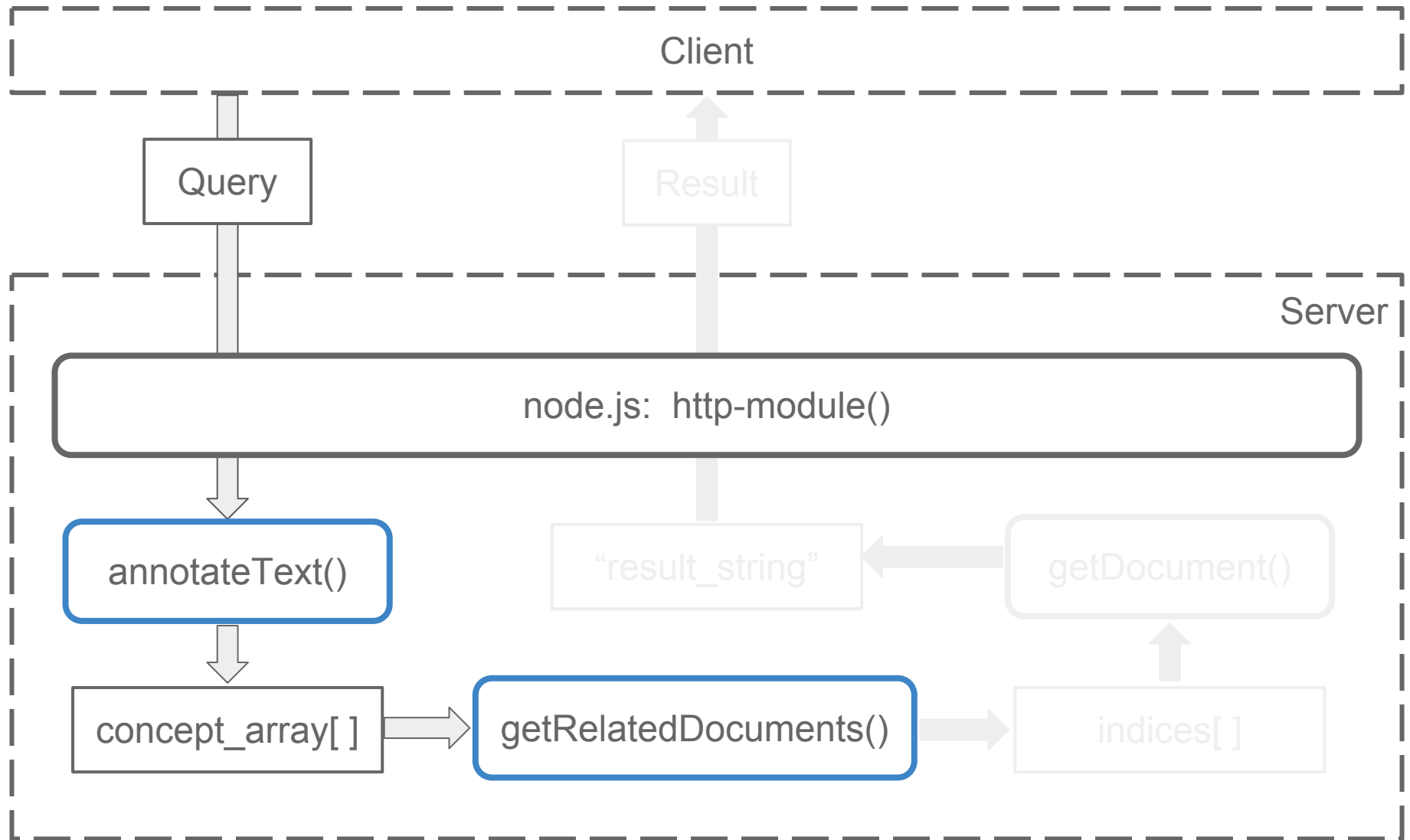
4.2. Tutorbot - Online Structure



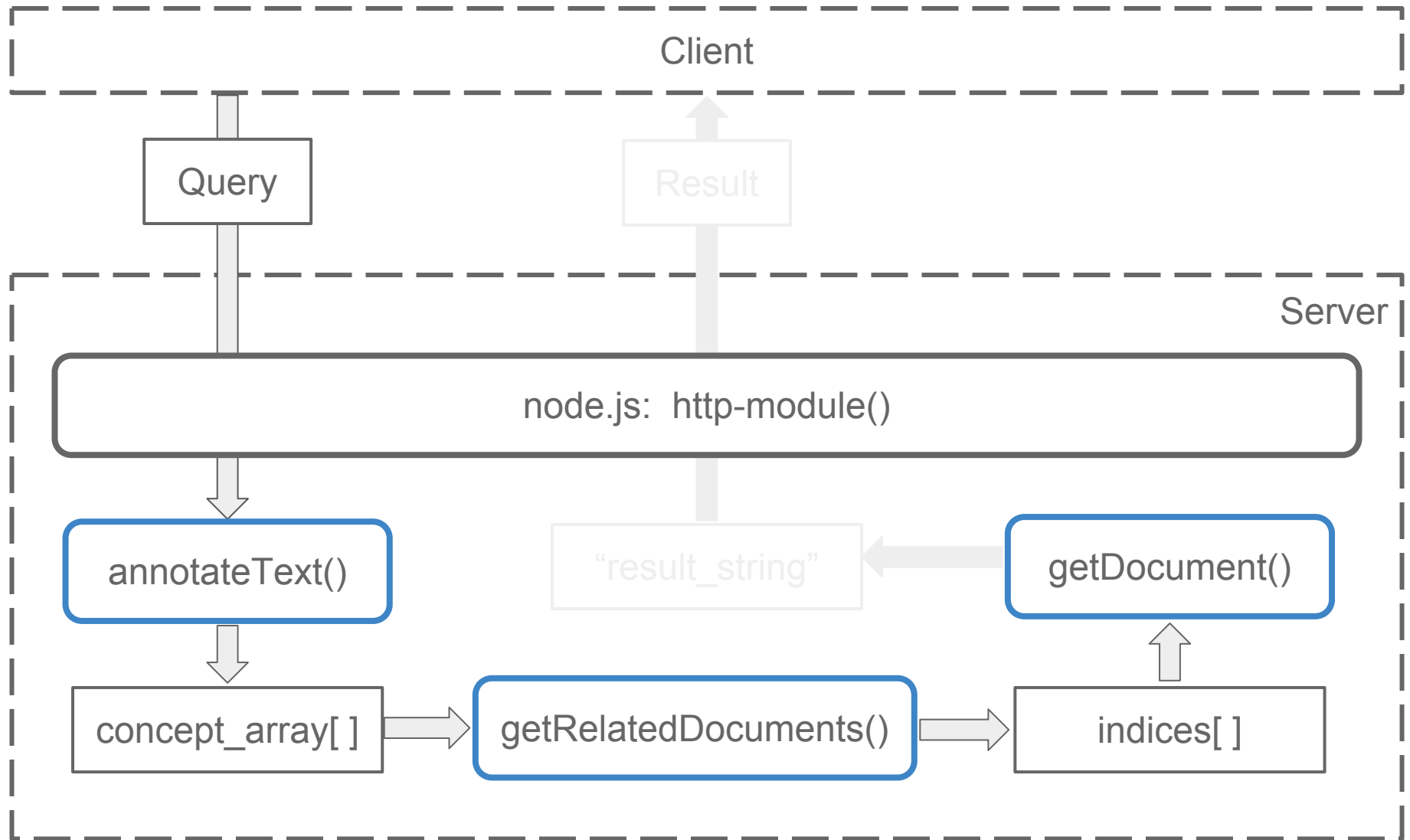
4.2. Tutorbot - Online Structure



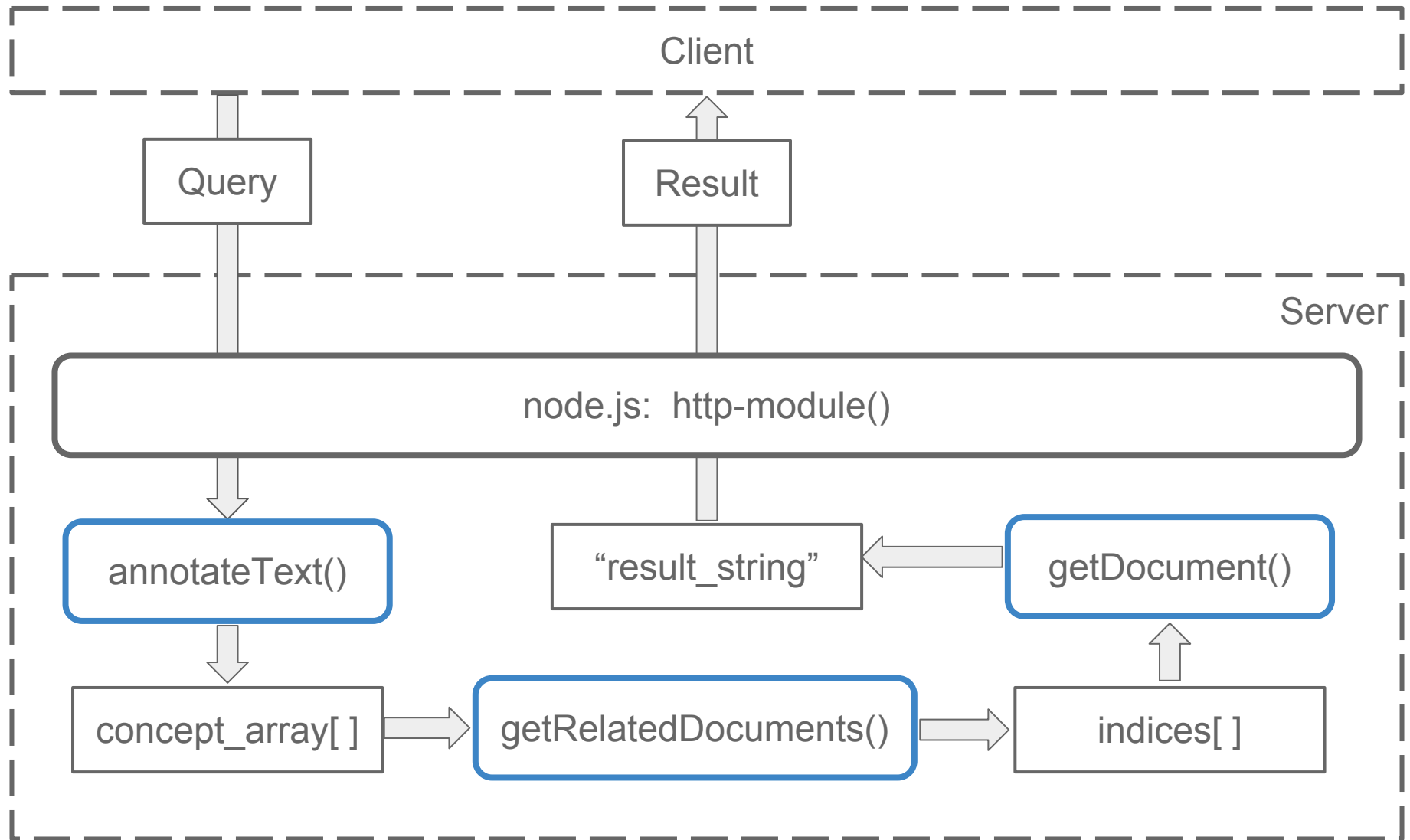
4.2. Tutorbot - Online Structure



4.2. Tutorbot - Online Structure



4.2. Tutorbot - Online Structure



5. Tutorbot - Demonstration



The image shows a screenshot of the Tutorbot interface. At the top, the word "Tutorbot" is displayed in a colorful, multi-colored font. Below the logo is a text input field with the placeholder text "Write your query here..." and a "Submit" button to its right.

<https://tutorbot10.eu-gb.mybluemix.net/>

Questions?