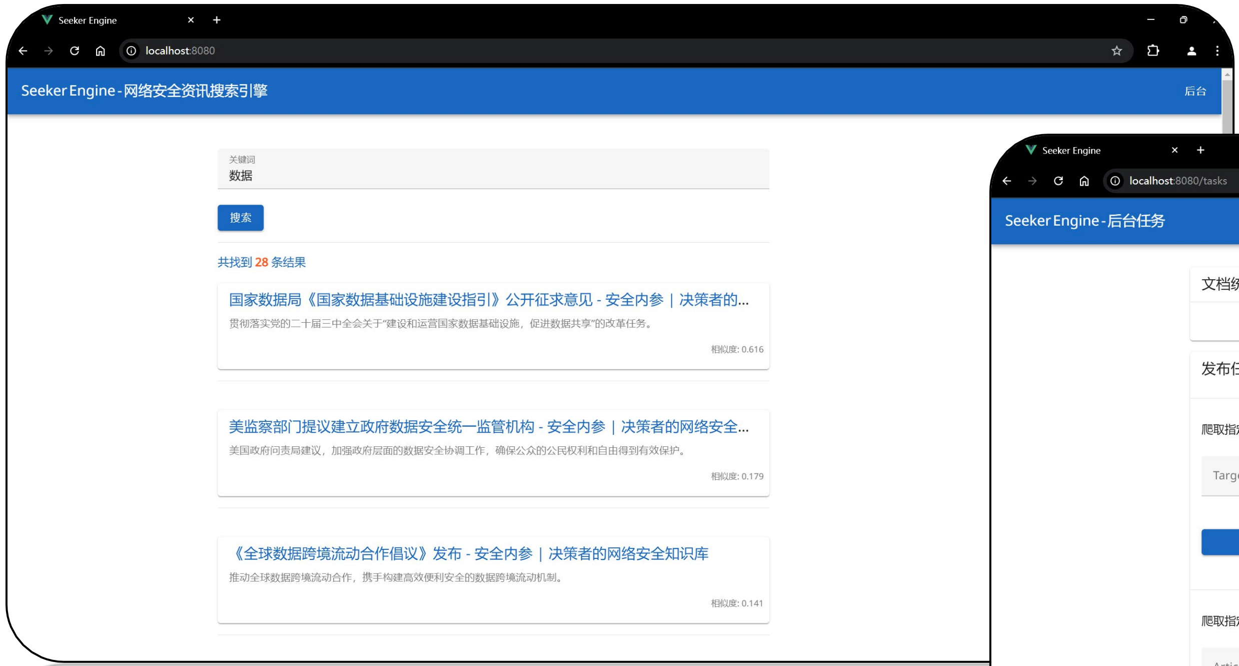
Seeker Engine
网络安全资讯搜索引擎

答辩人：脱敏处理

题目：Project-2 动态网页数据抓取与分页处理

项目介绍

名称：Seeker Engine - 网络安全资讯搜索引擎



Seeker Engine - 网络安全资讯搜索引擎

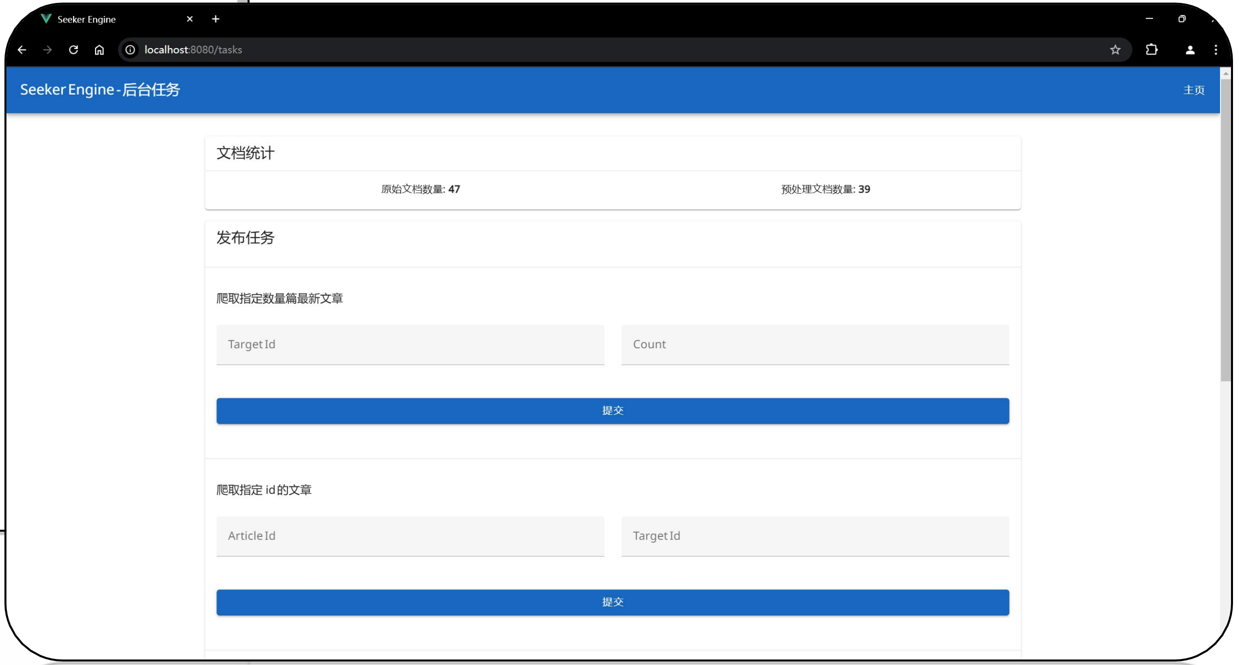
关键词
数据

共找到 28 条结果

国家数据局《国家数据基础设施建设指引》公开征求意见 - 安全内参 | 决策者的...
贯彻落实党的二十届三中全会关于“建设和运营国家数据基础设施，促进数据共享”的改革任务。
相似度: 0.616

美监察部门提议建立政府数据安全统一监管机构 - 安全内参 | 决策者的网络安全...
美国政府问责局建议，加强政府层面的数据安全协调工作，确保公众的公民权利和自由得到有效保护。
相似度: 0.179

《全球数据跨境流动合作倡议》发布 - 安全内参 | 决策者的网络安全知识库
推动全球数据跨境流动合作，携手构建高效便利安全的数据跨境流动机制。
相似度: 0.141



Seeker Engine - 后台任务

文档统计

原始文档数量: **47**　　预处理文档数量: **39**

发布任务

爬取指定数量篇最新文章

Target Id　Count

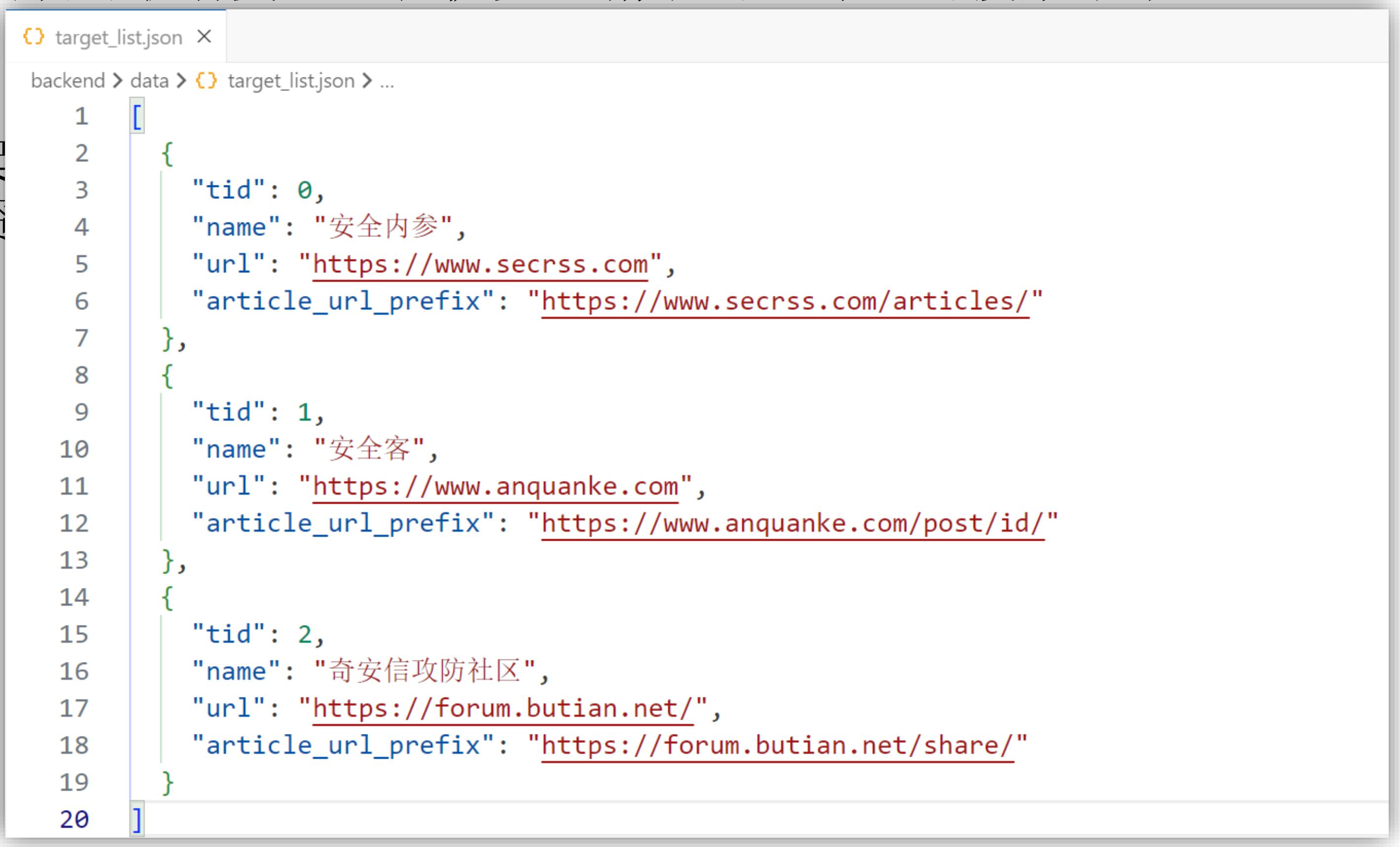
爬取指定 id 的文章

Article Id　Target Id

需求分析

通过搜索引擎精准搜索网络安全领域的最新资讯，提供更加精准的，专业的搜索结果。

基于这样的需求，项目需要定向爬
据处理以构建针对网络安全领域资



target_list.json ×

backend > data > target_list.json > ...

```json
[
  {
    "tid": 0,
    "name": "安全内参",
    "url": "https://www.secrss.com",
    "article_url_prefix": "https://www.secrss.com/articles/"
  },
  {
    "tid": 1,
    "name": "安全客",
    "url": "https://www.anquanke.com",
    "article_url_prefix": "https://www.anquanke.com/post/id/"
  },
  {
    "tid": 2,
    "name": "奇安信攻防社区",
    "url": "https://forum.butian.net/",
    "article_url_prefix": "https://forum.butian.net/share/"
  }
]
```

开发架构

前后端分离开发，其中：

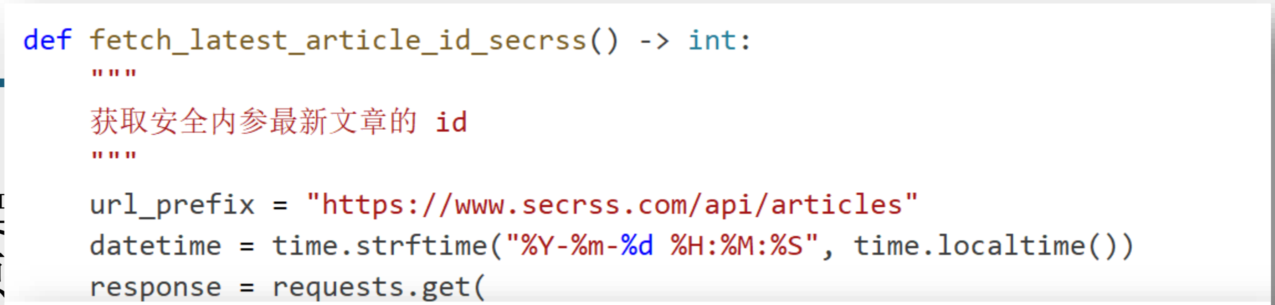
- 前端使用 Vue.js 构建页面
- 后端使用 Python FastAPI 构建 Web API，并集成爬虫、数据预处理、搜索引擎模块。

爬虫模块

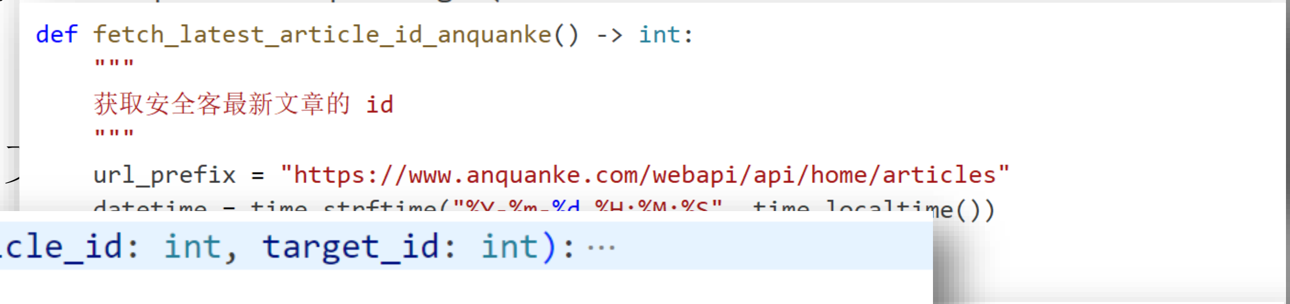
主要使用 **Requests** 和 **BeautifulSoup** 库爬
据库存储 <span>odid, url, title</span> 等元数据, 网页原

其中每个站点，根据分析，获取他们的
则，分别构建

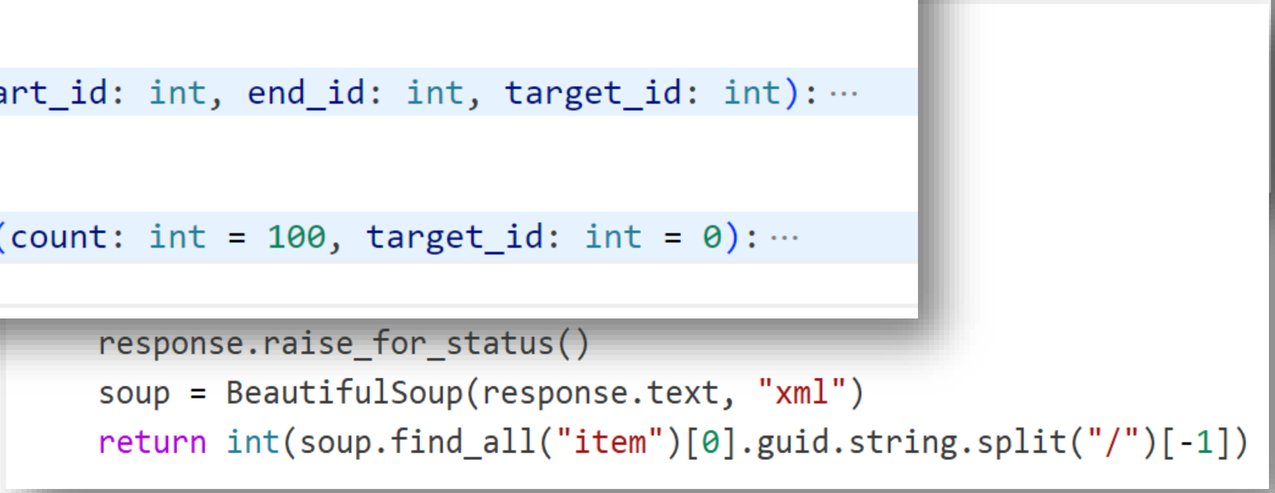
然后利用这几
用于构建后台



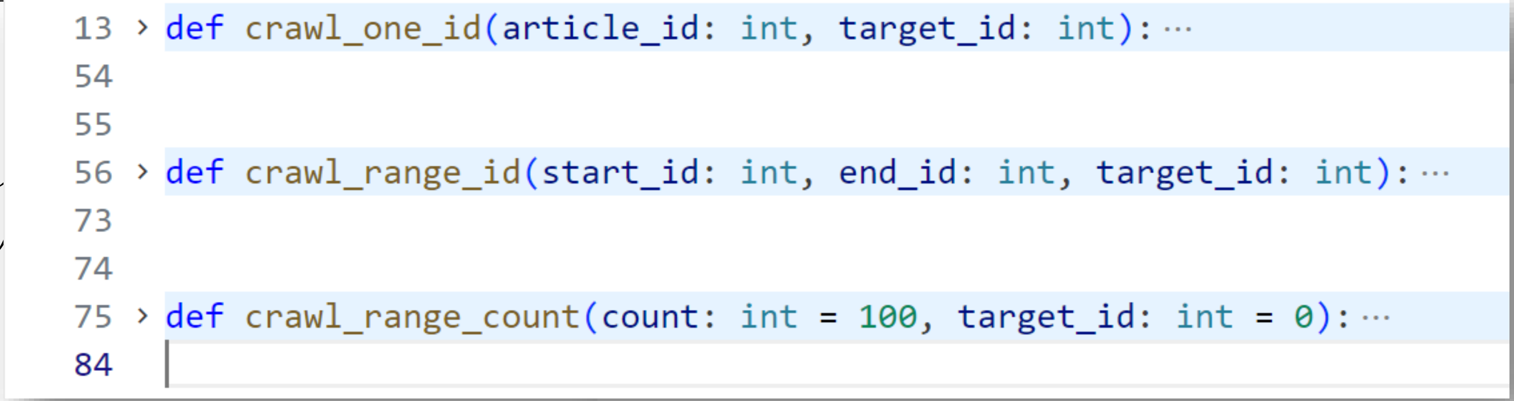
```python
def fetch_latest_article_id_secrss() -> int:
    """
    获取安全内参最新文章的 id
    """
    url_prefix = "https://www.secrss.com/api/articles"
    datetime = time.strftime("%Y-%m-%d %H:%M:%S", time.localtime())
    response = requests.get(
```



```python
def fetch_latest_article_id_anquanke() -> int:
    """
    获取安全客最新文章的 id
    """
    url_prefix = "https://www.anquanke.com/webapi/api/home/articles"
    datetime = time.strftime("%Y-%m-%d %H:%M:%S", time.localtime())
```



```python
    response.raise_for_status()
    soup = BeautifulSoup(response.text, "xml")
    return int(soup.find_all("item")[0].guid.string.split("/")[-1])
```



```python
def crawl_one_id(article_id: int, target_id: int):...


def crawl_range_id(start_id: int, end_id: int, target_id: int):...


def crawl_range_count(count: int = 100, target_id: int = 0):...

```

数据预处理模块 – 原理

倒排索引：即由原始文档集合的关键词构建的倒排索引，基于此可以快速查询某个词语所在的所有文档。

TF-IDF 值：词频（TF，Term Frequency）和逆文档频率（IDF，Inverse Document Frequency）的乘积。

$$\text{TF-IDF}(t, d, D) = \text{TF}(t, d) * \text{IDF}(t, D)$$

余弦相似度：通过计算两个向量夹角的余弦值来衡量它们的相似度。

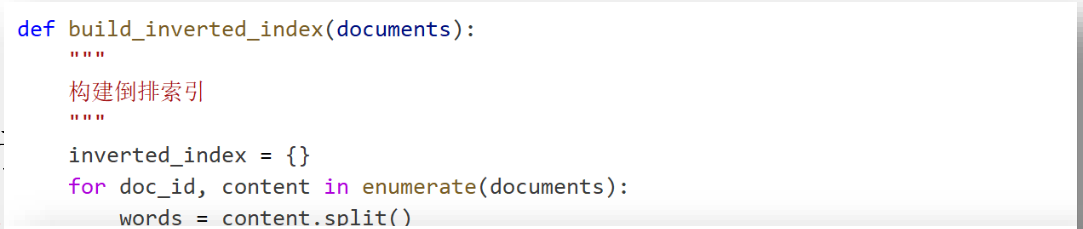
$$\cos(\theta) = (A \cdot B) / (||A|| * ||B||)$$

基于原理分析，项目预处理数据的步骤为：文档分词，构建倒排索引，构建 TF-IDF 矩阵。

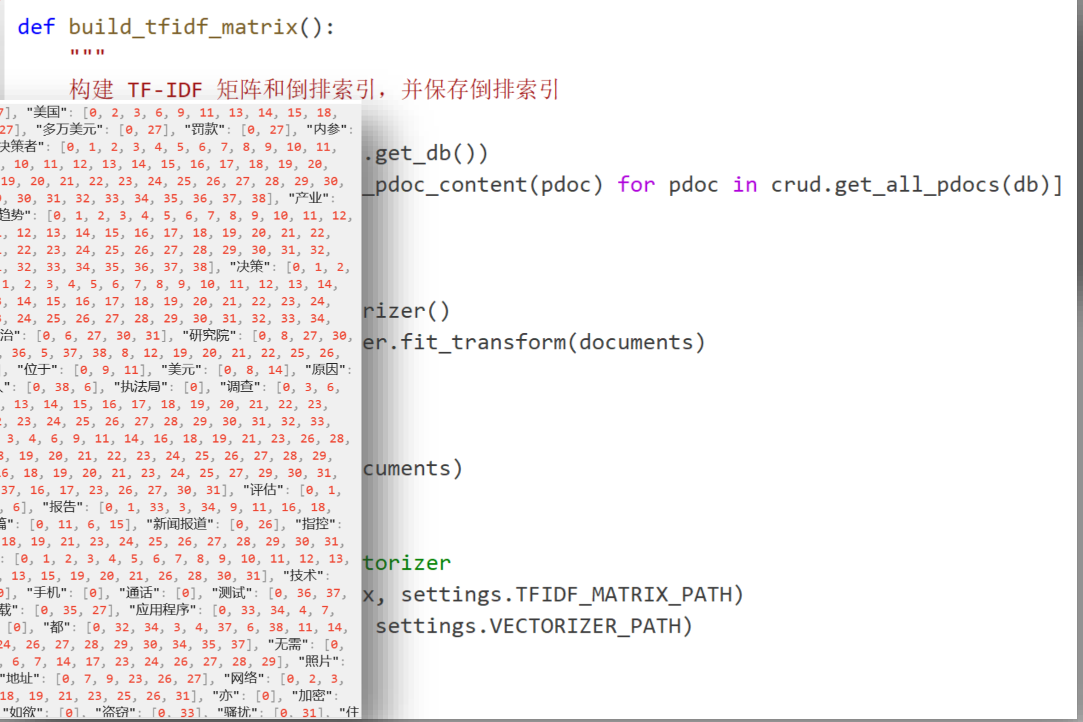
数据预处理模块 – 步骤

文档分词：

中文通过 jieba 库进行分词，英文通过 nltk 库进行
结果文档存储到文件系统预定义目录下的 {pdid}.



```
def build_inverted_index(documents):
    """
    构建倒排索引
    """
    inverted_index = {}
    for doc_id, content in enumerate(documents):
        words = content.split()
```



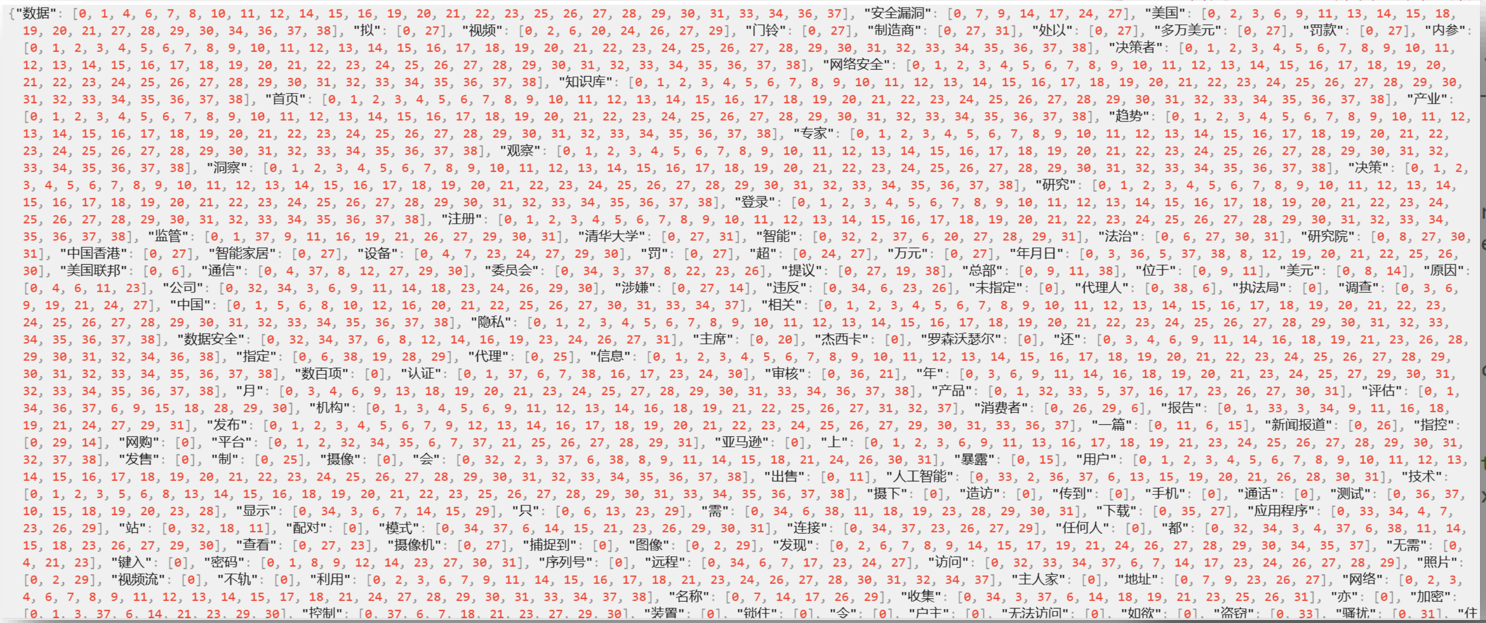
```
def build_tfidf_matrix():
    """
    构建 TF-IDF 矩阵和倒排索引，并保存倒排索引

.get_db())
_pdoc_content(pdoc) for pdoc in crud.get_all_pdocs(db)]


rizer()
er.fit_transform(documents)


cuments)


torizer
x, settings.TFIDF_MATRIX_PATH)
 settings.VECTORIZER_PATH)
```



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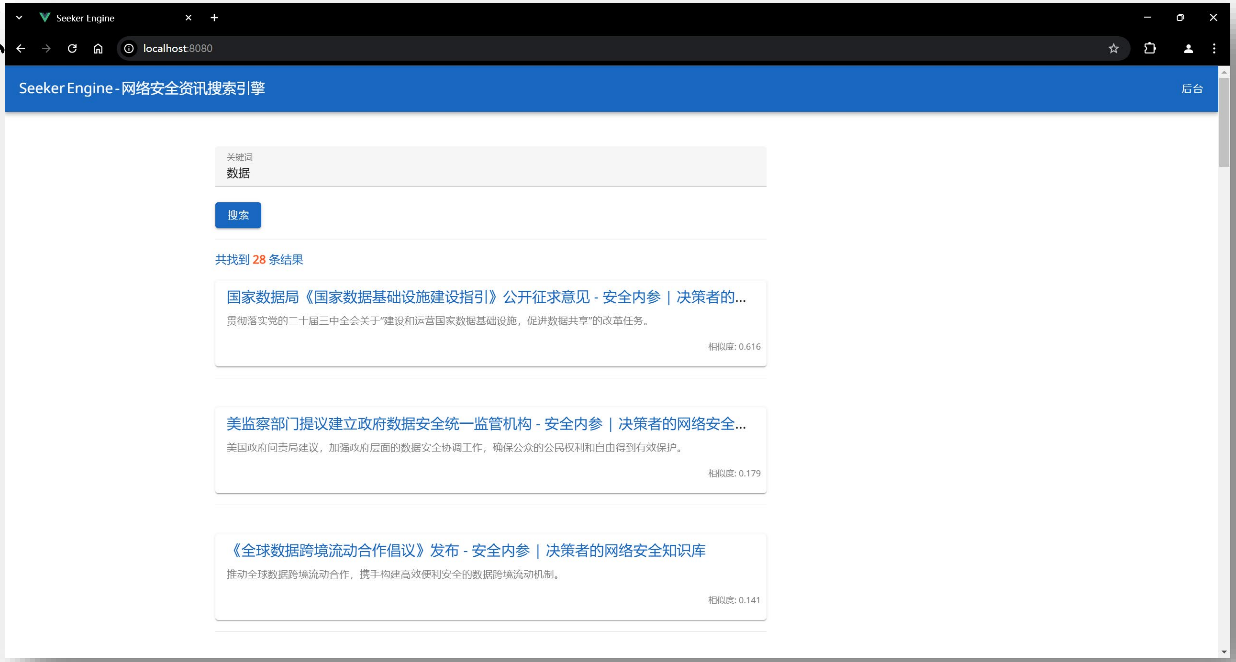
搜索模块

1. 前端页面输入搜索词，通过 Web API 调用后端搜索引擎模块。
2. 获取搜索词 -> 分词 -> 根据倒排索引查询相关文档。
3. 查询词通过 TfidfVectorizer 对象 TF-IDF 向量化

➔与文档集合的 TF-IDF 矩阵进行余弦相似

➔返回根据相似度排序的结果。



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后台

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共找到 28 条结果

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美监察部门提议建立政府数据安全统一监管机构 - 安全内参 | 决策者的网络安全...

美国政府问责局建议，加强政府层面的数据安全协调工作，确保公众的公民权利和自由得到有效保护。

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《全球数据跨境流动合作倡议》发布 - 安全内参 | 决策者的网络安全知识库

推动全球数据跨境流动合作，携手构建高效便利安全的数据跨境流动机制。

相似度: 0.141

参考文献

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谢谢！