Data Structures
Final Project Proposal
Thr 234 , Group16

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◎Topic：

I、Theme

For NCCU students looking for places to eat (finding restaurants)

II、Inspiration

Whenever hosting parents or friends from other areas, or when recommending restaurants to friends, there's a desire for search results that better meet the needs of students and are closer to NCCU.

III、Introduction

Recognizing that NCCU students often hesitate to choose a restaurant during meal times, sometimes due to unfamiliarity with the options, we have designed a search engine specifically for NCCU students. By referencing actual online reviews and adjusting search parameters, we cater to students who want a reliable choice without the risk. Our project, tailored for those who hesitate on what to eat next, is designed specifically for the hungry and risk-averse!

V、Websites to be ranked

https://udn.com/news/story/7205/6899303
https://www.cosmopolitan.com/tw/lifestyle/food-and-drink/g38052018/nccu-food-1025/
https://blog.dokonani.com/tai-bei-mei-shi-zheng-da-tong-xue-qing-zhu-yi-shi-he-yue-hui-de-5-jian-lang-man-can-ting-qing-shou-cang-bao-zhun-ti-sheng-gao-bai-cheng-gong-lu/
https://hshsharehouse.com/一起遊政大！推薦美食、景點/

IV、Keywords for ranking

政大
木柵
平價
學生

VI、Schedule

Project ideation (October to November) → Function design (11/14 to 11/21) → Proposal presentation (11/21) → Coding (11/21 to 12/23) → Testing/Improving features (12/23 to 12/25) → Project presentation (12/26)

◎System Specifications:

I、Target Users

Students looking for restaurants near NCCU.

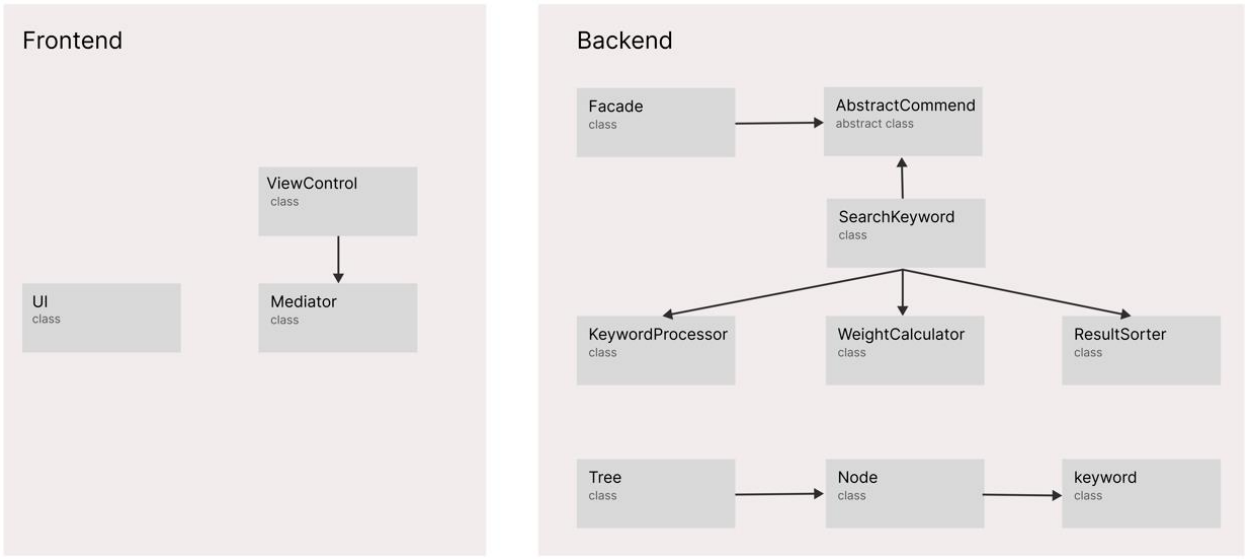
II、Purpose

To tailor search results to better meet the needs of NCCU students.

III、System features and how to use

The system calculates the frequency of specific keywords within websites and scores the websites by applying weighted importance to these keywords. This allows for a ranking based on these scores, offering a more customized set of search results.

V、Class Diagram



Keyword class

Keyword class	
Fields	(double)count (String)name (double)Weight
Properties	Name Score

Methods	Keyword

Tree class

Tree class	
Fields	name root
Properties	Name IsEmpty
Methods	Add Append PostOrderTraverse PreOrderTraverse Rank SetCount ToList Tree

Node class

Node class	
Fields	ancestor children keyword name sum url
Properties	Ancestor Children IsExternal IsRoot Level Sum

Methods	BuildChildren BuildKeywords CalculateSum Node ToString

◎System Development Phases:

I、Rank web pages based on keywords and their weights

This feature involves calculating scores based on predefined weights for selected keywords on web pages. Using Node's calculateSum() function, we compute the weighted sum of multiple keywords for each site, send the results to a Tree for ranking, and then return the results to be displayed on the front end.

II、Read and include sublinks within the web page in the ranking calculation

This feature extends support to sublinks. While ranking the main webpage, sublinks are retrieved, and their weighted scores are added to the main webpage's total score. This aggregate score is then sorted using the Tree's ranking module before being displayed on the front end.

III、Use keywords to search on Google or Yahoo and rank the returned links

This functionality allows users to enter custom keywords, which are passed to the backend for a Google search. The URLs from the search results are encoded with the keywords and their HTML content is fetched. The GetHTML() function parses the content, and keywords are scored and reranked, with the results displayed on the front end.

V、Identify potentially useful keywords from pages returned by Google searches.

From the search pages, we analyze the related searches section of the HTML content using the HtmlHandler's DeriveRelativeKeywords() function to extract associated keywords. For instance, from a search for "NCCU food," keywords like "affordable restaurant" and "Muzha breakfast" are extracted for subsequent searches.

IV、Web/Application Development Concept

⊙Homepage:

-Title/logo

-Search box: Allows users to quickly search for specific foods, restaurants, or cuisines.

-Navigation menu: Includes home, favorites, recommendations, and map functions.

⊙Main features:

-Dynamic map: Displays nearby restaurants with clickable icons showing brief information like name, cuisine type, and user ratings.

-Category filters: Users can filter restaurants by criteria like "affordable," "currently open," "cuisine type," and "student discounts."

-Recommendations section: Based on popularity among students, reviews, or promotions.

⊙Restaurant list:

-List view: Displays each restaurant in a list format, including exterior, name, distance from NCCU, price range, and average rating.

-Quick view: Clicking on a restaurant card expands it to display menu highlights, operating hours, and an option to view more details.

⊙Detailed page:

-Photos and descriptions: Gallery of food and venue along with descriptions.

-Menu highlights: Showcases signature dishes and prices, with an option to view the full menu.

-Reviews and ratings: User-submitted reviews including ratings on food quality, service, and atmosphere.

-Favorites: Users can bookmark their favorite restaurants for easy future access.