

Trip Planning Web Application

1. Project Summary

A trip planning web application based Google Map API, Spring MVC framework an Hibernate, aiming to improve user trip experience and help each user to plan an share their trip.

2. Summary of the Functionality Performed

- Implemented wide user administrative functions with comprehensive validations, including as registration, login, logout, forget password and validate email and different user input.
- Implemented basic place search functions. By providing center address and place search keyword, it will return a list of places with name, address, and other information details, marked in a real map.
- Implemented advanced place search functions. By providing center address, place search keyword, limited time and preferred transport mode, it will return a list of places with name address and other info, marked in a real map.
- Place address autoComplete functions in place search.
- Implemented checking place detail functions. User can check many kinds of places detailed information such as website, formatted address, rate, opening states, photos in goole map library and so on. In addition, use can also get access to direction routes and costed durations from center location to that specific place, by providing different travel mode.
- Implemented favorite place list of each user. User can add some places through process of searching place. Also, user can directly check there favorite place and also remove it from the list.
- Implemented function of designing and publishing trip plan, in which planner can search places and add them to or remove them from that plan place list. In next step, planner will edit some trip related information such as each place description, stayed durations and selecting travel mode of each period. Also, the application will help planner calculate spending time of each period.
- Implemented functions of viewing all published plan list, checking their detail content, downing them in PDF and giving them a like.

3. Summary of the technologies used

Google Map API	
IP-API	Providing current location detail by IP address, response in JSON
Google Maps Java Script API	Create map on a webpage, and label some customized markers.
Google Places API	<ul style="list-style-type: none">Place text search: return a list of places by providing center location, radius, and keyword in JSON format.Place detail: return place detail by providing specific place id in JSON format.Place Autocomplete: Automatically fills-in the name and / or address of a place as user type.
Google Maps Geocoding API	Realized transformation between textual address and accurate geographic coordinates.
Google Map Directions API	Calculate directions among multiple locations with their cost duration
Google Map Distance Matrix API	Estimate travel time and distance from multiple originals to multiple destinations.
Function Related	
Gson	extract information from json format returned by google map api
iText	Used to generate PDF view of trip plan
Apache common email	Used to validate user email input and future user communication
Captcha	Used to improve user input validation
Authentication	Authenticate each user conditions and roles to render to different page
Filter	Use filter of user input to prevent SQL inject
Web Programming technique	
AJAX	Used to get some dynamic response in some web page, also used in validation user input in registration process
JQuery	
JavaScript	
Font End Technique	
bootStrap	Get more interactive user interface
fontAwesome	Provide some cute icon to improve user experience

4. Explanation of roles

(1) Common user

• Description:

Common user are the basic role of this application, they are provide all functions related to place search, favorite list, and trip plan browsing.

• Tasks:

- Registration of the application, login, log out and forget password.
- search places with providing some required fields like keyword and center location(current location and other location), getting a list of keyword.
- In addition to those basic field, he can also provide some optional field like limited durations and travel mode(driving, walking, bicycling, and transit), getting a list of keyword.
- Auto Complete of address input field
- Get place detailed information including:
 - ① Directed route from center location to that specific location, showing in a map, with providing text direction, and needed duration, in different travel mode.
 - ② Detailed information of that place including: name, address, opening hour, website, phone number and so on.
 - ③ Several photos of that place provided by google map.
- Check their favorite list
- Add those searched place to their favorite list, and remove them from their favorite list.
- Check published trip plan list, get access to its' detail page, download trip plan information in PDF and give it support.

(2) Planner

• Description:

Planner's are some professional user of that application, they can design a trip plan and published in the website, which can be viewed by common user.

• Tasks:

- Implement ALL common user tasks
- Design there own trip plan:
 - ① Search, add or remove places from a trip list, check place location on the map.
 - ② Editing place description, recommending stay time , recommending travel mode and getting needed time of each period.

- ③ Editing plan title, abstract and other related information.
- ④ Public the plan.

5. Screen Shot

1: Register: use comprehensive input validation.
All fields are required.

Email must be in proper format.
Validation of username duplication condition using Ajax.
Two passwords must be same, reminder dynamically remind user.

Register

Name

zheng Liu
username is validate

Email

zhengliu1217@gmail.com

Password

...

Confirm Password

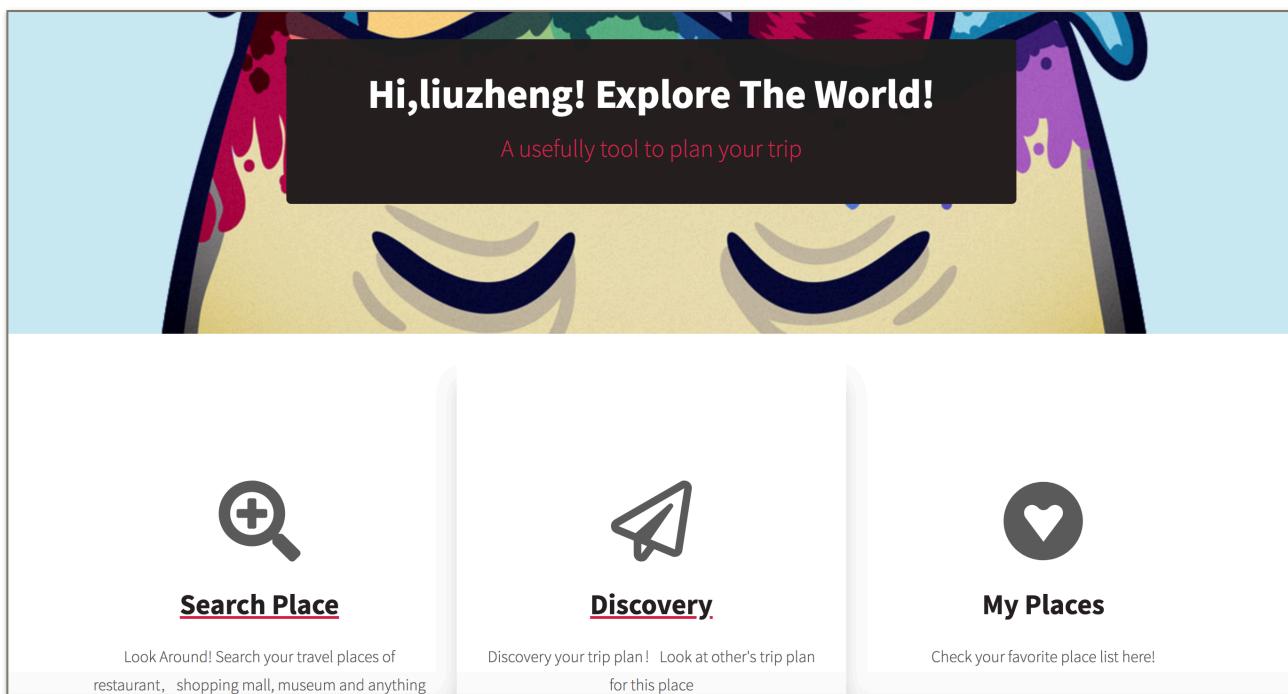
...

OK

Retype the characters from the picture:

BPDKS3
What is BotDetect Java CAPTCHA Library?

2. UserDashboard



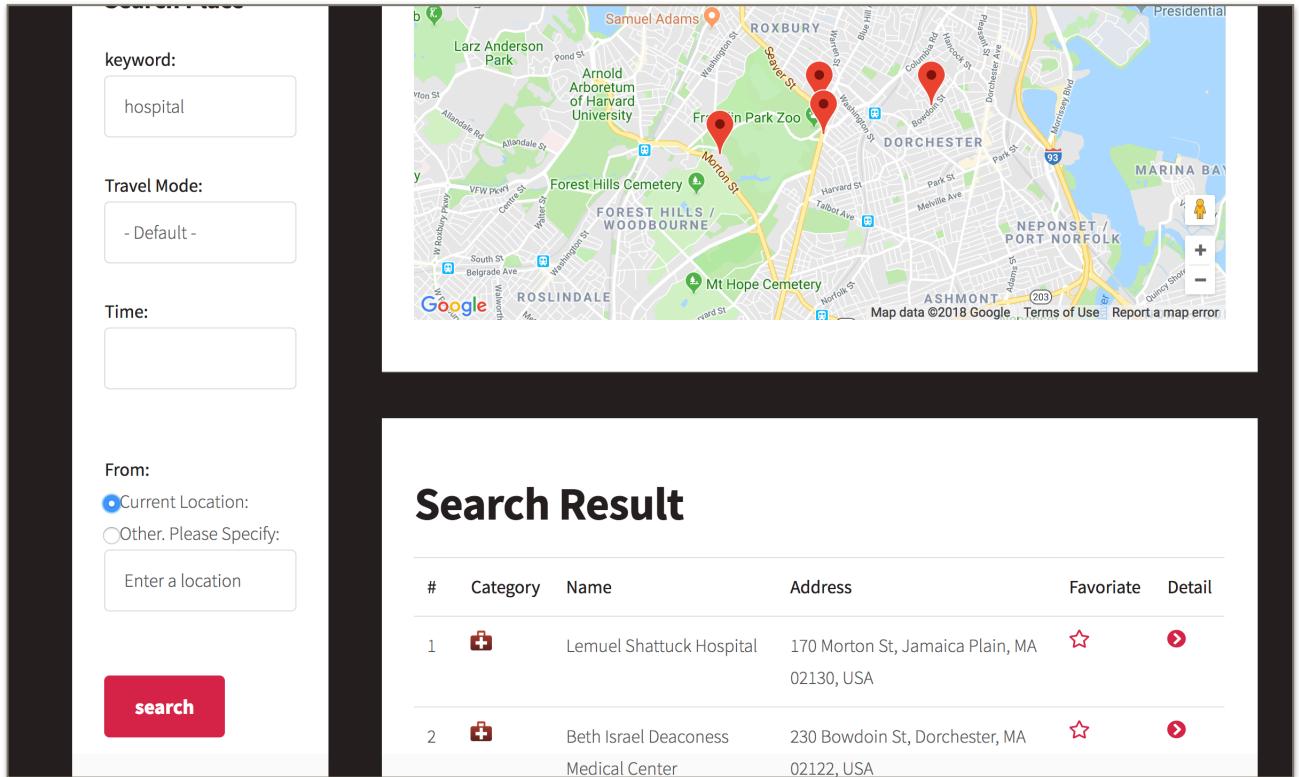
3. Search Place

use keyword and center location to search place
(take "hospital" as keyword and current location as center address)

result places marked on a map
 result places list is showed on left table, including, place number, name, address, icon of category.

User can click the star to add this place to favorite list.

User can click the next button to check place detail.



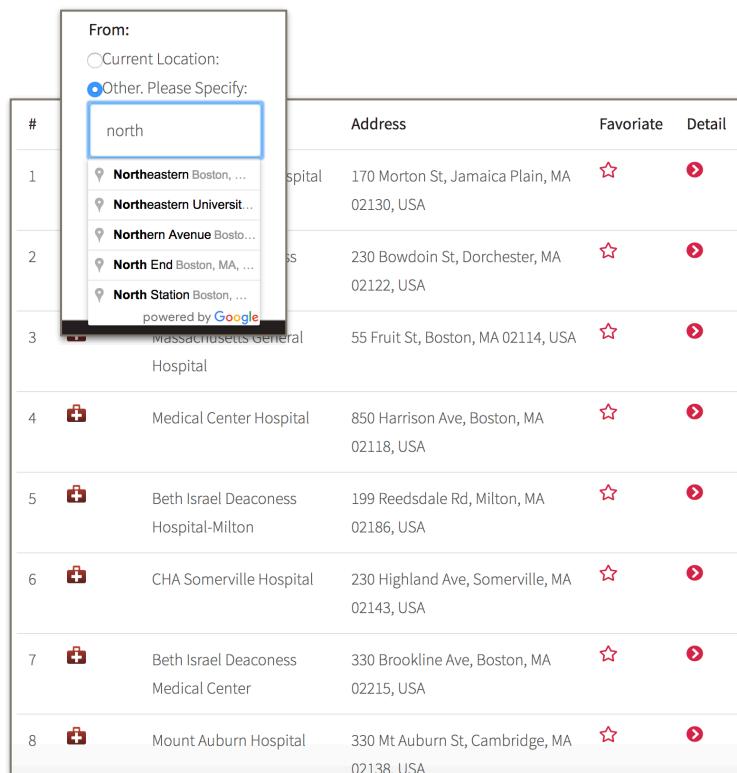
The screenshot shows a search interface with the following components:

- Search Form:** On the left, there is a form with fields for "keyword" (containing "hospital"), "Travel Mode" (set to "Default"), and "Time". Below the form is a red "search" button.
- Map:** In the center, a map of Boston, Massachusetts, displays several red location markers. Labeled areas include Roxbury, Dorchester, Roslindale, Forest Hills / Woodbourne, and Ashmont. A specific location at 170 Morton St is highlighted with a red marker.
- Search Result Table:** On the right, a table titled "Search Result" lists two hospital entries. Each entry includes a small icon, the place number, category, name, address, a "Favorite" star icon, and a "Detail" link.

#	Category	Name	Address	Favorite	Detail
1	Hospital	Lemuel Shattuck Hospital	170 Morton St, Jamaica Plain, MA 02130, USA		
2	Hospital	Beth Israel Deaconess Medical Center	230 Bowdoin St, Dorchester, MA 02122, USA		

Result list of this search

4. Address Autocomplete when we choose other place as center location



The screenshot shows a search interface with the following components:

- Search Form:** On the left, there is a form with fields for "From:" and "Other. Please Specify:". The "Other. Please Specify:" field contains "north" and has a blue border, indicating it is the active input. Below the form is a dropdown menu showing address suggestions starting with "north".
- Search Result Table:** On the right, a table lists eight hospital entries. Each entry includes a small icon, the place number, category, name, address, a "Favorite" star icon, and a "Detail" link.

#	Address	Favorite	Detail
1	170 Morton St, Jamaica Plain, MA 02130, USA		
2	230 Bowdoin St, Dorchester, MA 02122, USA		
3	55 Fruit St, Boston, MA 02114, USA		
4	850 Harrison Ave, Boston, MA 02118, USA		
5	199 Reedsdale Rd, Milton, MA 02186, USA		
6	230 Highland Ave, Somerville, MA 02143, USA		
7	330 Brookline Ave, Boston, MA 02215, USA		
8	330 Mt Auburn St, Cambridge, MA 02138, USA		

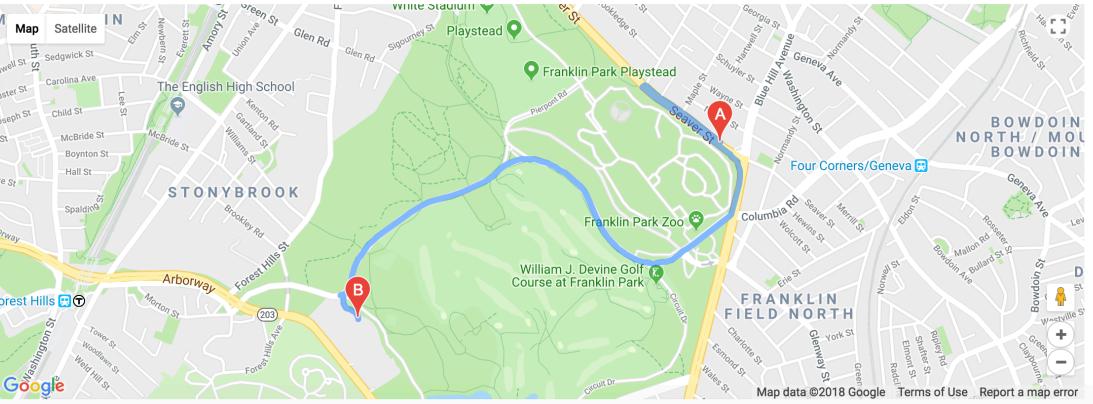
5. Place Detail page

user can get direction route and costed duration from center location to that place. (Take driving as example) and textual direction as well.

Duration

6 mins

DRIVINGWALKINGBICYCLINGTRANSIT



Map | Satellite | IN
Map data ©2018 Google | Terms of Use | Report a map error

A 286 Seaver St, Boston, MA 02121, USA

1.8 mi. About 6 mins

1. Head northwest on Seaver St toward Maple St	0.2 mi
2. Make a U-turn at Elm Hill Ave	0.3 mi
3. Turn right onto Blue Hill Avenue	0.1 mi
4. Turn right onto Franklin Park Rd	0.2 mi
5. Continue onto Circuit Dr/N Jewish War Vets Dr	0.9 mi
6. Continue straight Destination will be on the right	499 ft

B 170 Morton St, Boston, MA 02130, USA

Map data ©2018 Google

6. Place Detail page

user can get place detail information in a table

6. Place Detail page

user can get place photos

6. Favorite Place

Photo



user can check their favorite places in a list
and click the trash box icon to remove it from this list



Search Result

#	Category	Name	Address	Remove	Detail
1	🍴	Burger King	1208 Dorchester Ave, Boston, MA 02125, USA		
2	🍴	McDonald's	3064 Washington St, Roxbury, MA 02119, USA		

7. Check Published plan list

user can go to discovery in the dashboard to check all published plans.
user can download it in PDF version by clicking the download button.
user can check the plan detail by clicking next button

ALL PLANS						
#	Plan name	Description	Author	Like Number	DownLoad	Detail
1	food tour	eat something	liuzheng	1		
2	sephora tour	make up your self		0		

8. Design plan - search places

this is the search results list of trip design page. User can click the add button to add it to its' plane

9. Design plan - Selected places

user can check there selected place in “your plan” area
user can remove it from this list by clicking the remove button

user can check the location on the map by clicking its' address

Your plan

R

Step 1 KFC - remove
465 Washington St, Dorchester, MA 02124, USA

Step 2 McDonald's - remove
3064 Washington St, Roxbury, MA 02119, USA

Step 3 Wendy's - remove
530 American Legion Hwy, Roslindale, MA 02131, USA

Step 4 Next Step Soul Food Cafe - remove
657 Washington St, Boston, MA 02124, USA

4 McDonald's 870 Massachusetts Ave, Boston, MA 02118, USA

5 McDonald's 3064 Washington St, Roxbury, MA 02119, USA

6 McDonald's 1513 Dorchester Ave, Dorchester, MA 02122, USA

10. Design plan - Edit addition information
user can add description and stay time recommendation of each place

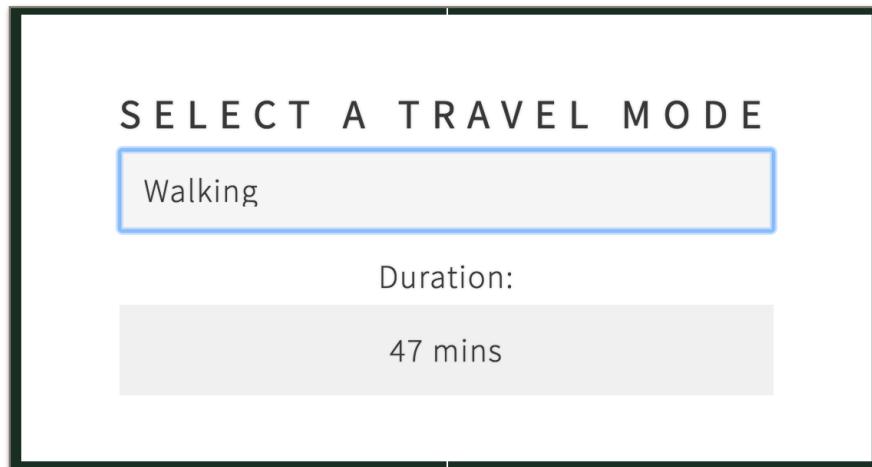
K F C

465 Washington St, Dorchester, MA 02124, USA

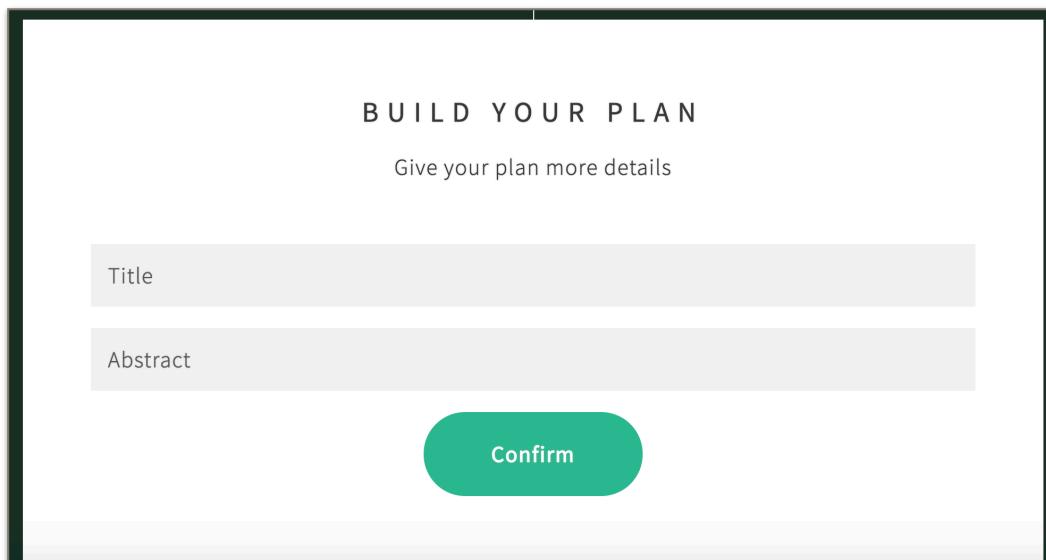
Estimate to Stay

description

11. Design plan - Edit addition information
user can select recommending travel mode and get need time.



12 Design plan - Edit addition information
user can also add title and abstract of that plan
and submit those edited information by clicking confirm button



12 Check Plan detail

user can check this plan detail and give this plan a like by clicking the link

Address:360 Longwood Ave, Boston, MA 02215, USA

Description:

Transport

Travel Mode:WALKING

Duration:47 mins

Food For The Soul

Address:651 Warren St, Boston, MA 02121, USA

Description:

Like This Plan