

# China Rail Travel Planner

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# Questions

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- Assume users have a  $\{\text{number}\}$ -day vacation, where can the users go and visit?
- Assume users have a  $\{\text{number}\}$ -dollar budget, where can the users go and visit?
- Assume users have a  $\{\text{number}\}$ -day vacation and  $\{\text{number}\}$ -dollar budget, where can the users go and visit?

# Data Sources & References

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## Data sources:

[12306.cn](http://12306.cn): Official website of China Railway. Schedule of a specific train station

[IP138.com](http://IP138.com): Schedule of a specific train

[GPSSPG](#): Retrieve coordinates of every train station

## Visualization:

[Echarts](#): Geo component example

[China Railway Map](#): Railway map

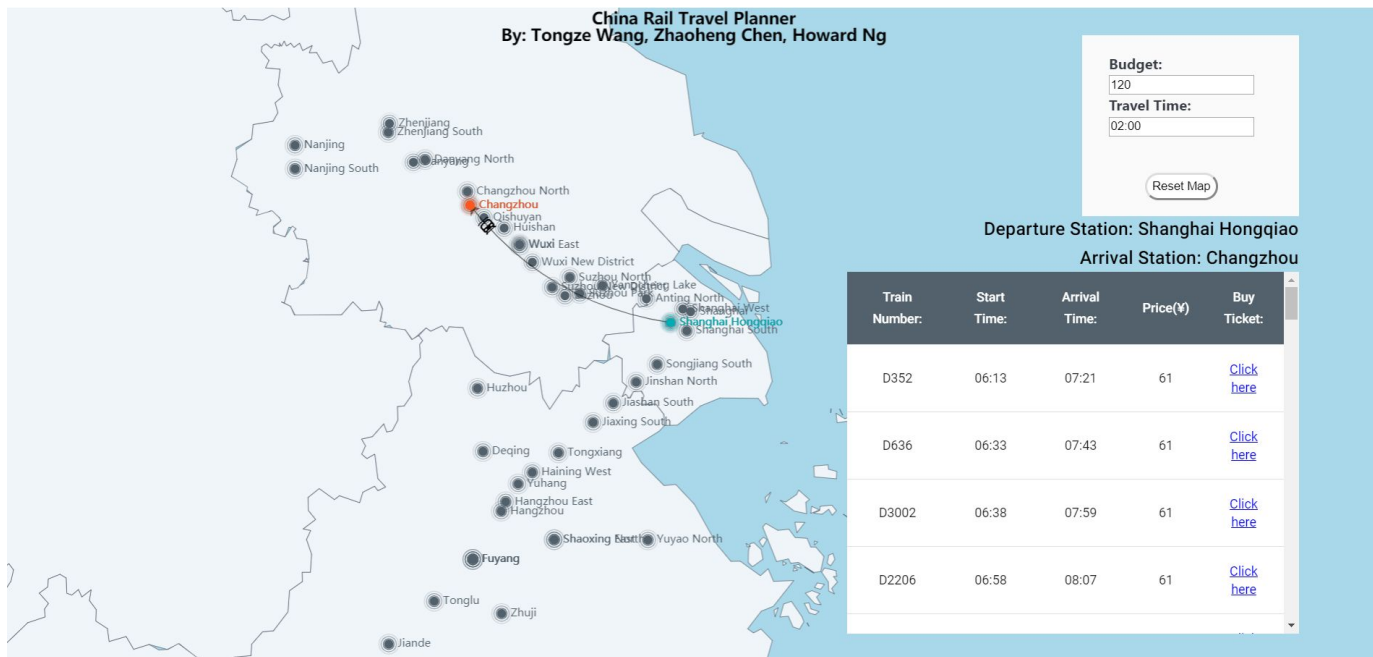
# Question Answered & Visualization

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All questions are answered and visualized with an interactive webpage:

<https://howardng940990575.github.io/CSE184-Final-Project-Railroad-Travel-React/>

# Visualizations



# Libraries Used

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## Web scripting:

Python 3: BeautifulSoup4, JSON, requests, re, numpy, pandas

## Visualization:

[React](#): Create the interactive webpage

[Echarts-for-react](#): The map component of the webpage

[React-gh-pages](#): Publish the react app to the github page

# Transfer Search Algorithm - (Extra Part)

Run: transfer x

```
/home/wtongze/PycharmProjects/cse184_final/venv/bin/python /home/wtongze/PycharmProjects/cse184_final/transfer.py
```

```
Shanghai Hongqiao can reach 77 stations without transfer
```

```
There are 41 possible stops that can be used to reach Nanjing from Shanghai Hongqiao in 1 transfer
```

```
Shanghai Hongqiao ----> Nanjing with 1 transfer
```

```
===== Top 5 Cheapest Transfer Route =====
```

```
¥ 61.0 / 05 hr 31 min : Shanghai Hongqiao (07:10) ===<G7358>===> (07:36) Shanghai (08:51) ===<K290>===> Nanjing (12:41)
```

```
¥ 61.0 / 05 hr 39 min : Shanghai Hongqiao (07:10) ===<G7358>===> (07:36) Shanghai (08:57) ===<K376>===> Nanjing (12:49)
```

```
¥ 63.5 / 06 hr 28 min : Shanghai Hongqiao (06:13) ===<D352>===> (06:47) Suzhou (09:58) ===<K290>===> Nanjing (12:41)
```

```
¥ 63.5 / 06 hr 03 min : Shanghai Hongqiao (06:38) ===<D3002>===> (07:12) Suzhou (09:58) ===<K290>===> Nanjing (12:41)
```

```
¥ 63.5 / 06 hr 19 min : Shanghai Hongqiao (06:38) ===<D3002>===> (07:12) Suzhou (10:23) ===<K516>===> Nanjing (12:57)
```

```
===== Top 5 Fastest Transfer Route =====
```

```
01 hr 53 min / ¥ 139.0 : Shanghai Hongqiao (08:48) ===<G7104>===> (09:16) Suzhou (09:27) ===<G7006>===> Nanjing (10:41)
```

```
01 hr 59 min / ¥ 139.0 : Shanghai Hongqiao (09:41) ===<G7132>===> (10:16) Suzhou (10:27) ===<G7008>===> Nanjing (11:40)
```

```
02 hr 02 min / ¥ 130.5 : Shanghai Hongqiao (06:38) ===<D3002>===> (07:12) Suzhou (07:23) ===<G7002>===> Nanjing (08:40)
```

```
02 hr 04 min / ¥ 139.0 : Shanghai Hongqiao (09:36) ===<G7564>===> (10:11) Suzhou (10:27) ===<G7008>===> Nanjing (11:40)
```

```
02 hr 05 min / ¥ 130.5 : Shanghai Hongqiao (07:34) ===<D2212>===> (08:09) Suzhou (08:27) ===<G7004>===> Nanjing (09:39)
```

```
Process finished with exit code 0
```

# Contributions

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## **Tongze Wang: back-end**

- Scrapped, cleaned and wrangled all train data from the official website of China Railway and Stored into a single JSON file.
- Build the beta version of the train transfer searching algorithm.

## **Zhaoheng Chen & Howard Ng: Front-end**

- Visualized the data with an interactive webpage via React and echarts
- Implement the reachable train stations algorithm and update the map
- Implement the available trains algorithm and update the table
- UI design for the interactive map