

sdmay19-18: Real time Route Optimization

Report 6

March 25 - April 5

Team Members

Junjie Wen — *Backend Developer; Data Analytics Lead*

Zhanghao Wen — *Web Developer*

Yuhang Xie — *Web Developer; UI Lead*

Xinhe Yang — *Web Developer*

Tianhao Zhao — *Communication Leader; Technical Writing*

Summary of Progress this Report

- Find weather API according location
 - Implement weather API to backend provide weather data to frontend
 - According the weather and show up the suggestion to dispatcher
-

Past Week Accomplishments

We found a weather API call darksky to get the weather data, the data result like the image below:

```
weather home.component.ts:298
▼ {latitude: 42.01258406, longitude: -88.13527375, timezone: "America/Chicago", currently: {...}, minutely: {...}, ...} ⓘ
  ► alerts: (6) [{...}, {...}, {...}, {...}, {...}, {...}]
  ▼ currently:
    apparentTemperature: 55.89
    cloudCover: 0.94
    dewPoint: 50.76
    humidity: 0.83
    icon: "cloudy"
    nearestStormBearing: 154
    nearestStormDistance: 16
    ozone: 316.54
    precipIntensity: 0
    precipProbability: 0
    pressure: 1017.31
    summary: "Overcast"
    temperature: 55.89
    time: 1556752460
    uvIndex: 1
    visibility: 10
    windBearing: 11
    windGust: 2.64
    windSpeed: 1.71
    ► __proto__: Object
  ► daily: {summary: "Rain throughout the week, with high temperatures rising to 71°F on Sunday.", icon: "rain", data:...}
  ► flags: {sources: Array(11), nearest-station: 3.173, units: "us"}
  ► hourly: {summary: "Rain starting tomorrow morning, continuing until tomorrow afternoon.", icon: "rain", data: Arra...}
    latitude: 42.01258406
    longitude: -88.13527375
  ► minutely: {summary: "Overcast for the hour.", icon: "cloudy", data: Array(61)}
    offset: -5
    timezone: "America/Chicago"
```

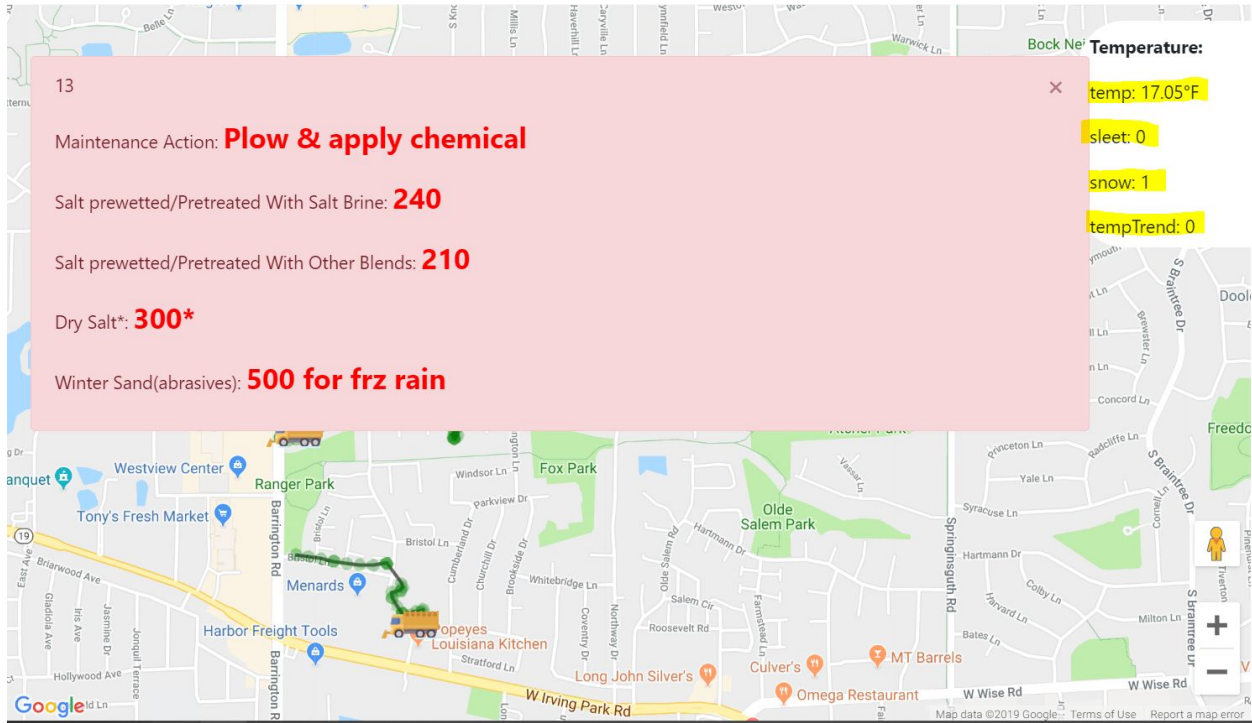
We deployed the Weather API on our AWS server to improve efficiency,. Then we can get the weather information of each car through the position of each car.

The weather data will add in the truck's data and send to frontend, as the image below

```

▼ (4) [{...}, {...}, {...}, {...}] ⓘ
  ▼ 0:
    Frz.rain: 0
    Hanover Park IL TGS - Conveyor_RPM (): 12960
    Hanover Park IL TGS - ESN (): ""
    Hanover Park IL TGS - GPS_gs (meter_per_sec): 10.726
    Hanover Park IL TGS - GPS_gs - transformed (meter_per_sec): 12.9...
    Hanover Park IL TGS - Liq_GPM (gal/min): ""
    Hanover Park IL TGS - Liq_GPM - transformed (gal/min): ""
    Hanover Park IL TGS - Location (): {"alt":247.458,"lat":42.0133...
    Hanover Park IL TGS - Outside_Temp (°F): ""
    Hanover Park IL TGS - Pressure (psi): 749
    Hanover Park IL TGS - Reflector_status (): ""
    Hanover Park IL TGS - Reflector_url (): ""
    alt: 247.458
    condition: -1
    lat: 42.01336496
    lng: -88.13240338
    sleet: 0
    snow: 0
    temp: 77.57600000000009
    tempTrend: 0
    timestamp: "2019-02-01T05:59:25.999869Z"
    _id: "5c802320b39e173aefc90011"
    ▶ __proto__: Object
    ▶ 1: {_id: "5c802320b39e173aefc90269", timestamp: "2019-02-01T05:47...
    ▶ 2: {_id: "5c802320b39e173aefc904c2", timestamp: "2019-02-01T05:35...
    ▶ 3: {_id: "5c802320b39e173aefc9071a", timestamp: "2019-02-01T05:24...
    length: 4
  
```

Then we can give Dispatcher advice based on the weather data of each car and the last report table we provided. The highlight is the weather conditions. For example the snow:1 mean it is snowing, then dispatcher need to do something according the suggestion.



Pending Issues

- Need unit test to testing the result of software
- Integration test for new function

Plans for Upcoming Reporting Period

- Implement reroute function using google route API
- Display reroute paths on google map for each truck
- Testing for each function

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Junjie Wen	Adjust backend algorithm of triggering those alert	11	61
Zhanghao Wen	Try to integrate darksky weather api to front-end features	10	51
Yuhang Xie	Get weather information from our server and show up on map. According the weather to show up the suggestion	12	67
Xinhe Yang	Get weather condition from weather API and make sure the front end suggestion was base on the real weather	11	64
Tianhao Zhao	Develop function tests. Help develop implementation features.	8	50