

# Personal Trip Planner





```
UserDetailsCardOnHover = showOnHover(UserDetailsCard);

UserLink = ({
  // ...
  secondaryLink,
  // ...
  includeAvatar,
  // ...
  className={styles.container}>
    includeAvatar && (
      <UserDetailsCardOnHover
        user={user}
        delay={CARD_HOVER_DELAY}
        wrapperClassName={styles.avatarContainer}
      >
        <Avatar user={user} />
      </UserDetailsCardOnHover>
    )
  // ...
  div
    className={classNames(
      styles.linkContainer,
      inline && styles.inlineContainer
    )}
    <UserDetailsCardOnHover user={user} delay={CARD_HOVER_DELAY}>
      <Link
        to={{ pathname: buildUserUrl(user) }}
        className={classNames(styles.name, {
          [styles.alt]: type === 'alt',
          [styles.centerName]: !secondaryLink,
          [styles.inlineLink]: inline,
        })}
      >
        {children || user.name}
      </Link>
      {!secondaryLink
        ? null
        : <a
            href={secondaryLink.href}
            className={classNames(styles.name, {
              [styles.alt]: type === 'alt',
              [styles.secondaryLink]: secondaryLink,
            })}
          >
            {secondaryLink.label}
          </a>
        }
    </UserDetailsCardOnHover>
  </div>
  <span>
```

```
145 </a>
146 </li>
147 </ul>
148 </div>
149 );
150 }
151
152 renderWhatsNewLinks() {
153   return (
154     <div className={styles}
155       <h4 className={style
156         <ul className={cla
157           {this.renderWha
158             {this.renderWha
159               {this.renderWha
160                 {this.renderWha
161                   {this.renderWha
162                     {this.renderWha
163                       {this.renderWha
164                         {this.renderWha
165                       </ul>
166                     </div>
167                   );
168                 }
169               renderWhatsNewItem(title, url)
170             return (
171               <li className={styles.footer
172                 <a
173                   href={trackUrl(url)}
174                   target="_blank"
175                   rel="noopener noreferrer"
176                 >
177                   {title}
178                 </a>
179               </li>
180             );
181           }
182         }
183       renderFooterSub() {
184         return (
185           <div className={styles.footerSub}>
186             <Link to="/" title="Home - Unsplash"
187             <Icon
188               type="logo"
189               className={styles.footerSubLogo}
190             </Link>
191             <span>
192               <span>
193                 </div>
194             </div>
195           );
196         }
197       render() {
198         return (
199           <footer className={styles.footerGlobal}>
200             <div className="container">
201               {this.renderFooterMain()}
202               {this.renderFooterSub()}
203             </div>
204           </footer>
205         );
206       }
```

*Using Machine Learning/ API  
to predict  
Train and Carspace Availability.*

## PERSONAL TRIP PLANNER CONCEPT

- **Description**

Using API and machine learning techniques to predict within the next few days on car park spaces and train occupancy.

- **Motivation for developing a Personal Trip Planner**

Currently with apps available there is limited products available to indicate occupancy accurately and predict for future travel.

Wanting to explore whether the use of API and machine learning can bridge this gap of information available for consumer use.

- **User Story**

A Sydney traveller going from Point A (i.e. Hornsby) to Point B (Central) can utilise an app where not only can they see train/bus/light rail timetable in real time, but also see the occupancy status of the car space available where they park their car and train capacity for the connecting train.





## DATA TECHNIQUES

### Data Sources:

1. Open Data - Transport NSW APIs and CSV
2. Open Data - Car Park API documentation
3. Open Data - Trip Planner API documentation

### Data Selection (Reasons):

1. Contains excel and API's for almost all modes of NSW public transport (with some limitations).
2. Contained same information as other Transport NSW information.
3. Had available train occupancy data (though only certain date - Dec 2018, Jan 2019, Feb 2019).

The logo for 'open data' in a sans-serif font. To the right of the text are five horizontal bars of different colors: dark blue, red, orange, light blue, and green.

Car park API



Car Park API Documentation



Trip Planner API Technical Documentation



Train Occupancy - December 2018 - CSV file per day



Train Occupancy - January 2019 - CSV file per day



Train Occupancy - February 2019 - CSV file per day

## DATA TECHNIQUES

### API:

- ✓ Def function to extract into a data frame with Timestamp and Available (number) of spaces.
- ✓ Created features to return X and y values.
- ✓ Split, train, fit and transform data.
- ✓ Used the LSTM model then predicted.
- ✓ Output a data frame with - Timestamp, Actual and Predicted, then plotted.

### Excel:

- ✓ Linear Regression to classify train occupancy using a weeks worth of data.
- ✓ Split, train, fit and transform data.
- ✓ Output a classification matrix based on the Occupancy Status (Few seats, many seats and standing room only).







## KEYS TO SUCCESS:

### ✓ Technologies used

- API
- Pandas
- Scikit-Learn
- Keras
- Matplotlib

### ✓ Breakdown of tasks

- Test with various machine learning models to classify and predict occupancy with the available excel files
- Use of APIs to extract real time data and generate predictions (constraints arose with this task)



### CHALLENGES:

- Lack of data sources to complete concept we originally thought
- Lack of historical data
  - Pre-COVID and only 3 months worth of available Train occupancy
- Limited time
  - As we progressed through the project we realised how we could have bridged the gaps in the lack of historical information
  - To finalise it to a visually appealing and user friendly app

### SUCCESSES:

- High Accuracy Predictions for Car Space Availability
- Learning how to bridge gaps in gathering information and how it could have been used for our original project concept



# DEMO

- *Part one*  
Car Space API
- *Part two*  
Train API
- *Part three*  
Train data Machine Learning
- *Part four*  
Conclusion - Personal Trip Planner







## NEXT STEPS

Capture real time data and store as a model data set at 5 minute intervals over a week (7 days) span.

Explore more machine learning models to fill in gaps with the given data to generate more accurate predictions of available capacity

## ADDITIONAL TOPICS TO RESEARCH

Explore further API and machine modelling to capture the data in 5 mins intervals to have a robust dataset for future predictions.

## PLAN FOR FUTURE DEVELOPMENT

Possibility to input all learning models into a usable application for consumer use i.e. Personal Trip Planner App.

# QUESTIONS?

**View coding and outputs here**

**LINKS:**



**SCAN ME**

**GitHub Repo for Project**

<https://github.com/Dottie-Doutre/Personal-Trip-Planner.git>