

Data Visualization Generator

User Manual

Doofenshmirtz Evil Inc

COS 301 - 2020

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DATA
VISUALIZATION GENERATOR

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1 Introduction

Huge amounts of structured and unstructured data is being stored and processed at a very high rate. This is where the term '**Big data**' comes from. Data is captured to help detect problems and to make better decisions. It is much easier for us as humans to gain insight from data patterns if it is visually represented using charts. These representations take a lot of time to create manually for each data set, especially when we want to create powerful tools like dashboards and drill-downs for end-users.

This app seeks to provide the above functionality, enabling users to create representations of graphs quickly and suggest possible graphs so that they don't have to set them up beforehand, all the while adapting to their preferences in order to generate more relevant graphs.

2 System Overview

The vision behind this project is to provide a service that will allow users to create and view dashboards containing graphical visualizations of big data. The big data is obtained from the user as a link to an external source, which is stored on the server. This data is then fed to an Interactive Genetic Algorithm(IGA) that will then generate suggestions for graphs.

The user can select a suggested graph and add it to their dashboard, which will then trigger the IGA to generate graph suggestions that are similar to the selected graph.

3 Installation

The application can be obtained from github:

<https://github.com/COS301-SE-2020/Data-Visualization.git>

The user will also need to install npm via their official website:

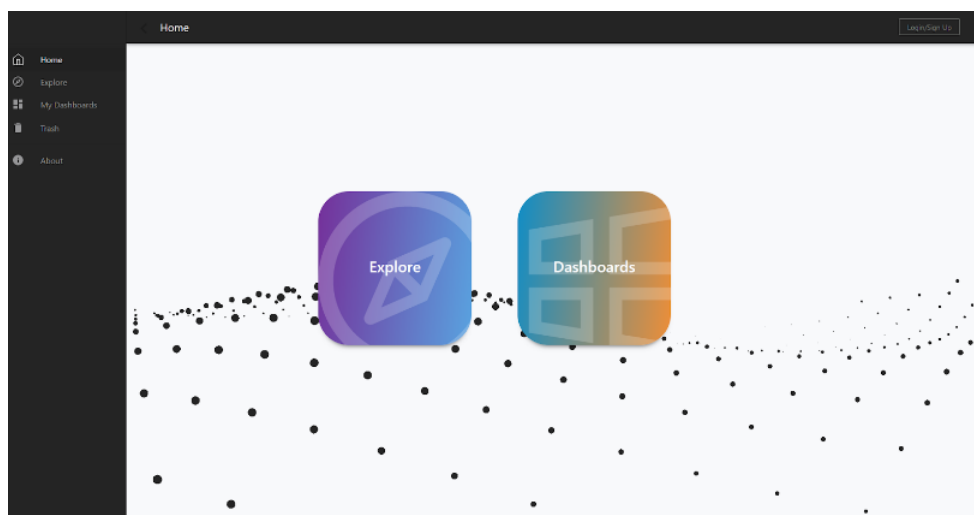
<https://www.npmjs.com/get-npm>

Before running the application file, one should navigate to [Data-Visualisation/data-visualisation-app](#) in the directory where the code from github was stored.

If the user is using Windows, they should open the command prompt in this directory. If they are using Linux, they should open the terminal in this directory. The user must then type: `npm install` This will install all the node modules required to run the app.

4 Getting Started

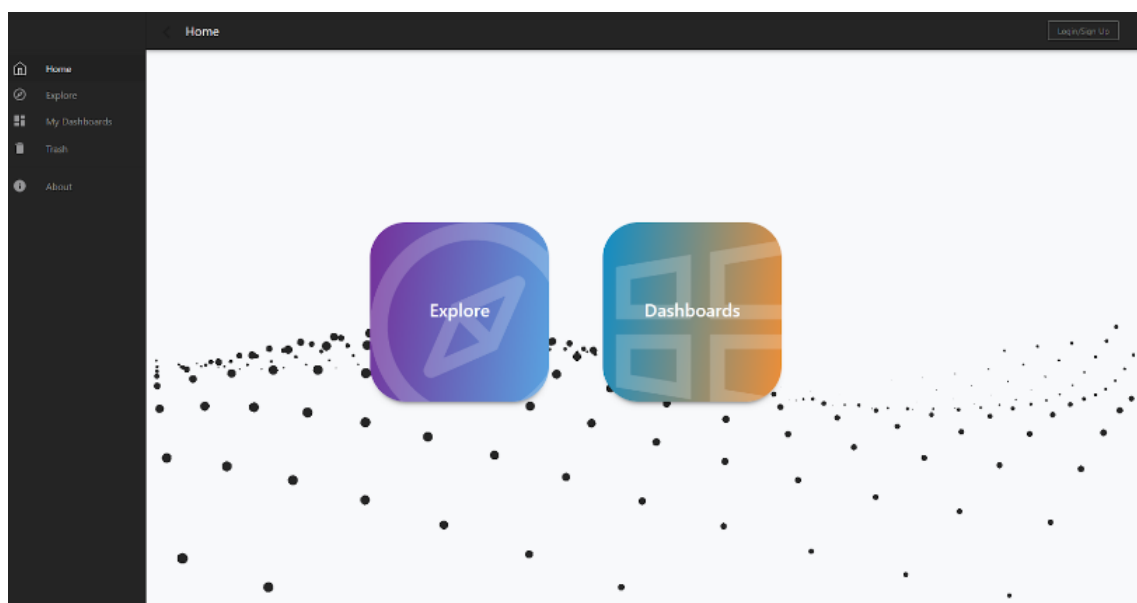
The app is a browser application and therefore requires a browser (Chrome or Firefox is recommended) to be installed on their computer. To launch the app, a user must open the terminal/command prompt in [Data-Visualisation/data-visualisation-app](#) and type: `npm start` . This will open a browser window and launch the application. Once the window loads the user will be greeted with the homepage:



5 Using the system

5.1 Homepage

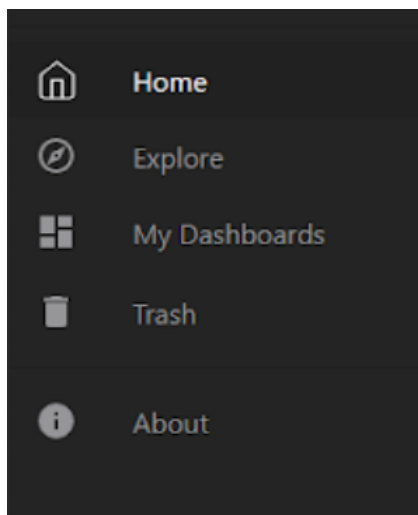
This is the first page that greets the user once the application is running.



On the homepage you will see two options: Explore and Dashboards, as well as a sidebar on the left and a Login/Sign Up button in the top right corner.

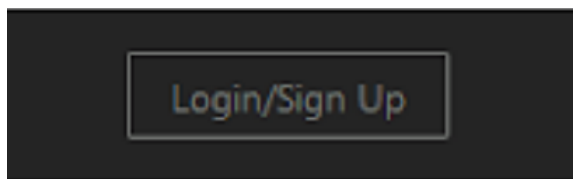
Selecting '**Explore**' will navigate to the Explore window, where the user can view graph suggestions - we will cover this later.

Selecting '**Dashboards**' will navigate to the Dashboards window. If the user is logged in they will be greeted with their saved dashboards, otherwise they will be asked to log in.



On the sidebar there are five options:

1. **Home** - This takes you to the homepage
2. **Explore** - This takes you to the Explore page
3. **My Dashboards** - This takes you to the Dashboards page
4. **Trash** - This takes you to the Trash page. (This does nothing and must be implemented)
5. **About** - This takes you to a page containing information about the application

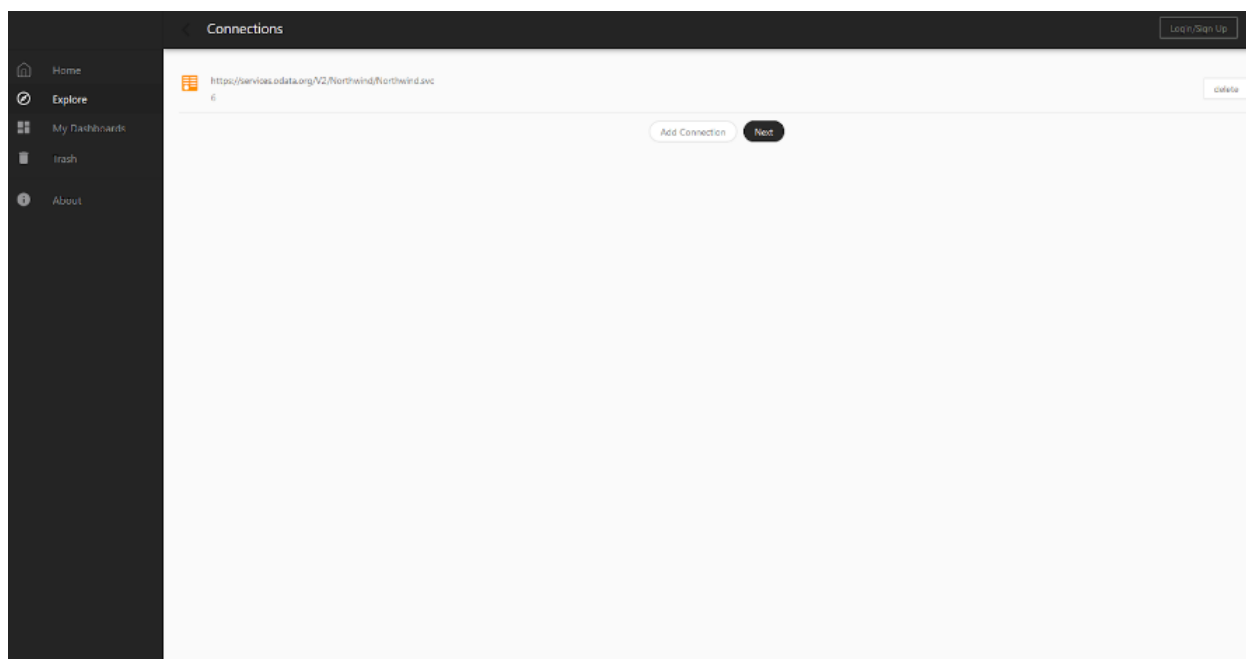


In the top right corner is a Login/Sign Up button(if the user is already logged in, they will instead have a Logout button), clicking on this will take you to a login screen where you can register an account or login to an existing one. The Logout button will log you out of your account.

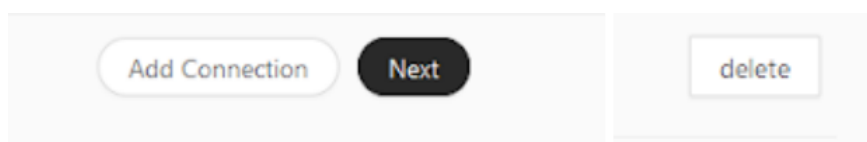
The sidebar and Login/Sign Up button will appear on every page.

5.2 Explore

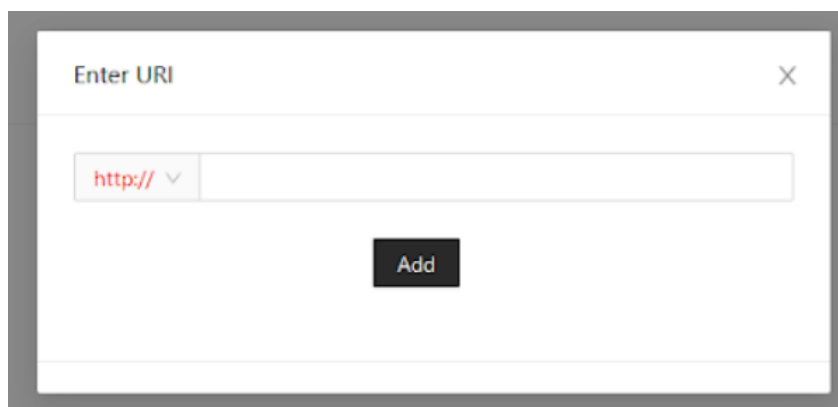
This is the page where the suggestion generation can be accessed and appears as follows:



Here we have the same sidebar and Login/Register button as in the homepage. Additionally we have 'Add Connection' and 'Next' buttons (Bottom Middle), as well as a Delete button (Middle Right).



The '**Add Connection**' button allows the user to add a link to an external source containing Big Data. Clicking on it will open the following popup:



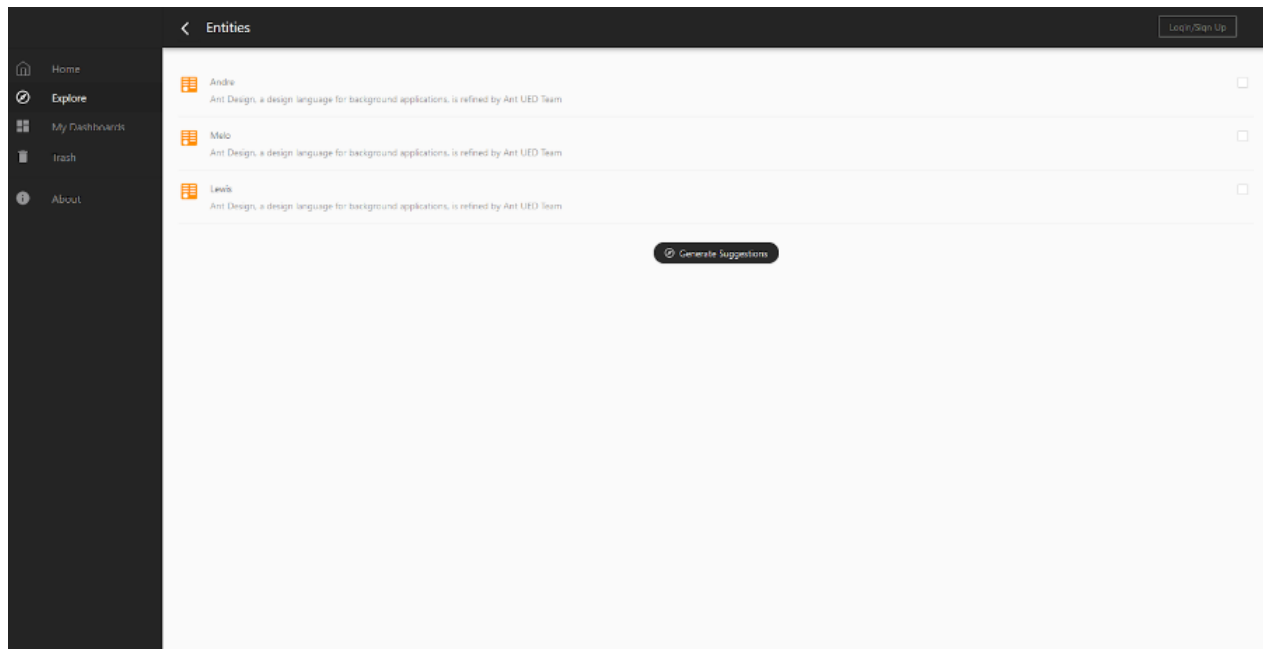
The user can then enter the link to the external data source and click 'Add' to add it to the list used in graph suggestion generation.

The '**Delete**' button will remove an existing data source from graph suggestion generation, this option might be used due to a user's preference or some other reason.

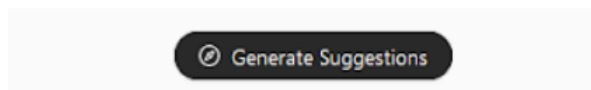
The '**Next**' button will take the user to the next page, where they can edit entities used in graph suggestions based on their selected sources. These entities can be viewed as 'Tables' or 'Categories' of data and are used to control what portions of data will be used in suggestion generation.

5.3 Entities

This page allows users to specify which portions of data should be focused on (if they so desire)



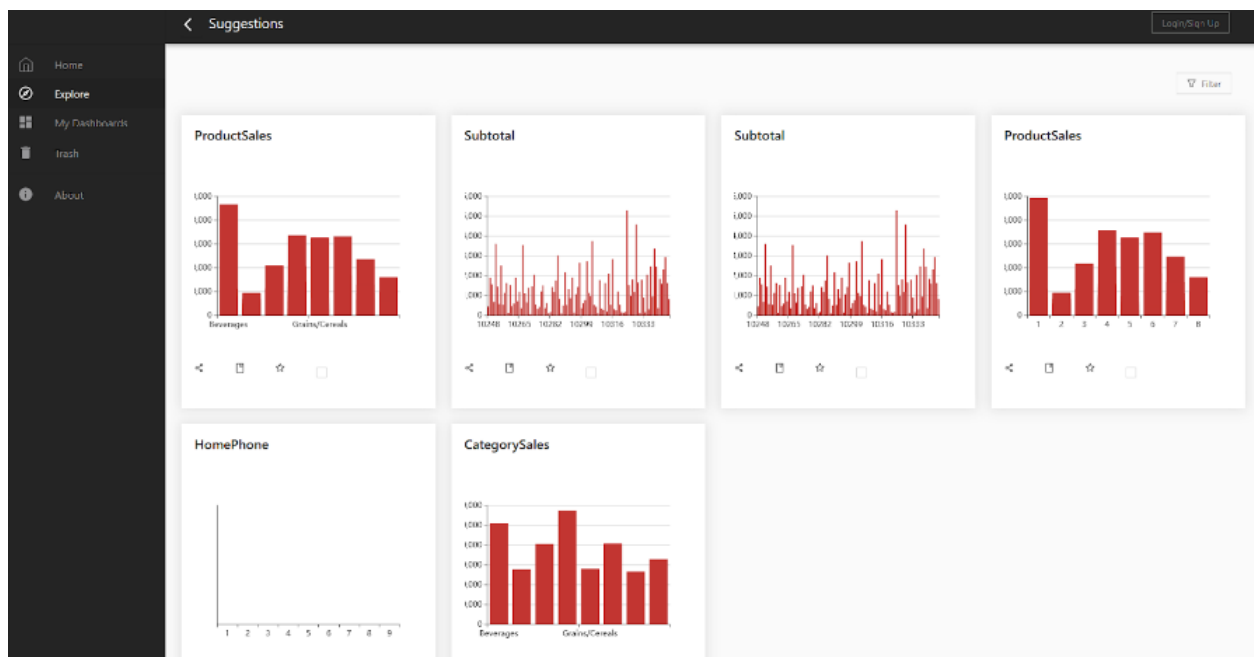
This page only has the '**Generate Suggestions**' button, as functionality to select entities is still on its way.



The '**Generate Suggestions**' button will take the user to the next page where the generated suggestions can be viewed.

5.4 Generate Suggestions

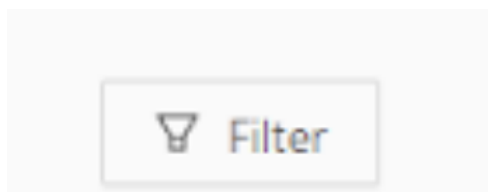
This page allows the user to view graph suggestions and add them to a dashboard if they desire.



This page simply contains graph suggestions and a 'Filter' button. Each suggestion also has three options:



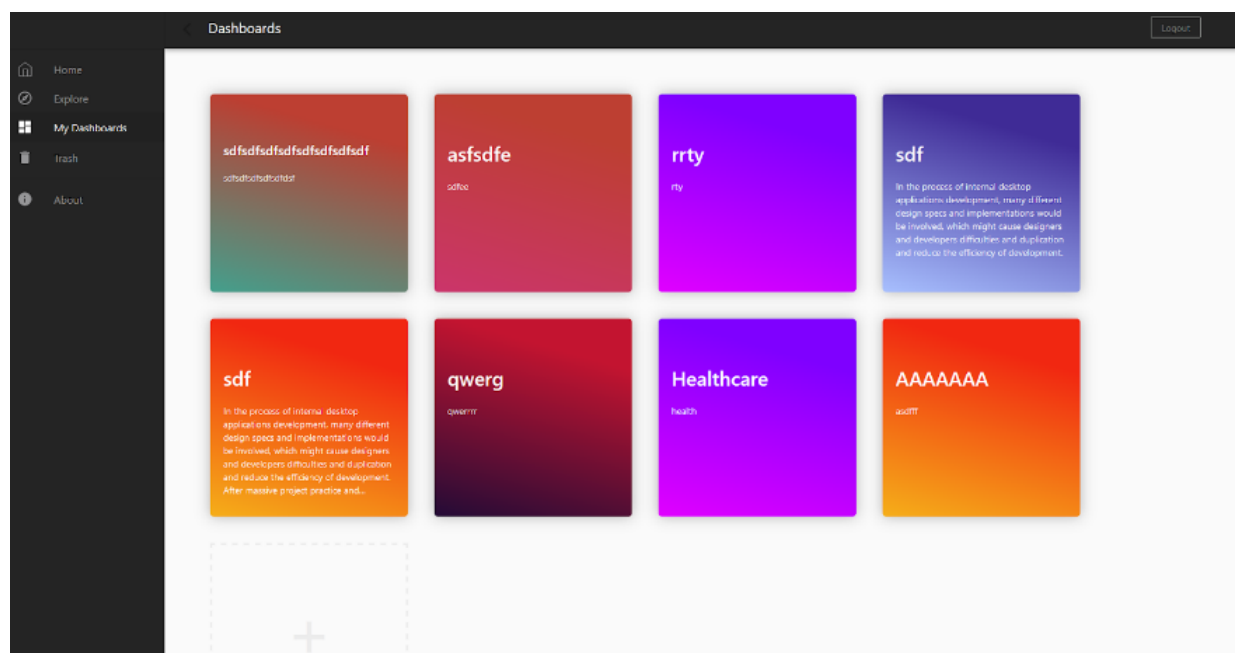
1. The first option allows the user to share a suggestion.
2. The second option lets the user bookmark the suggestion.
3. The final option allows the user to rate the quality of the suggestion.



The **'Filter'** button lets the user filter graph suggestions according to certain criteria.

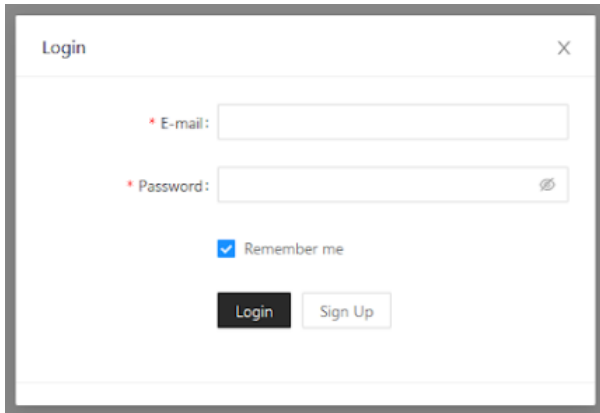
5.5 My Dashboards

This page displays the user's saved dashboards if they are logged in, or asks them to log in otherwise.



When logged in, the user is greeted with all their dashboards. They can select any one of these to view them.

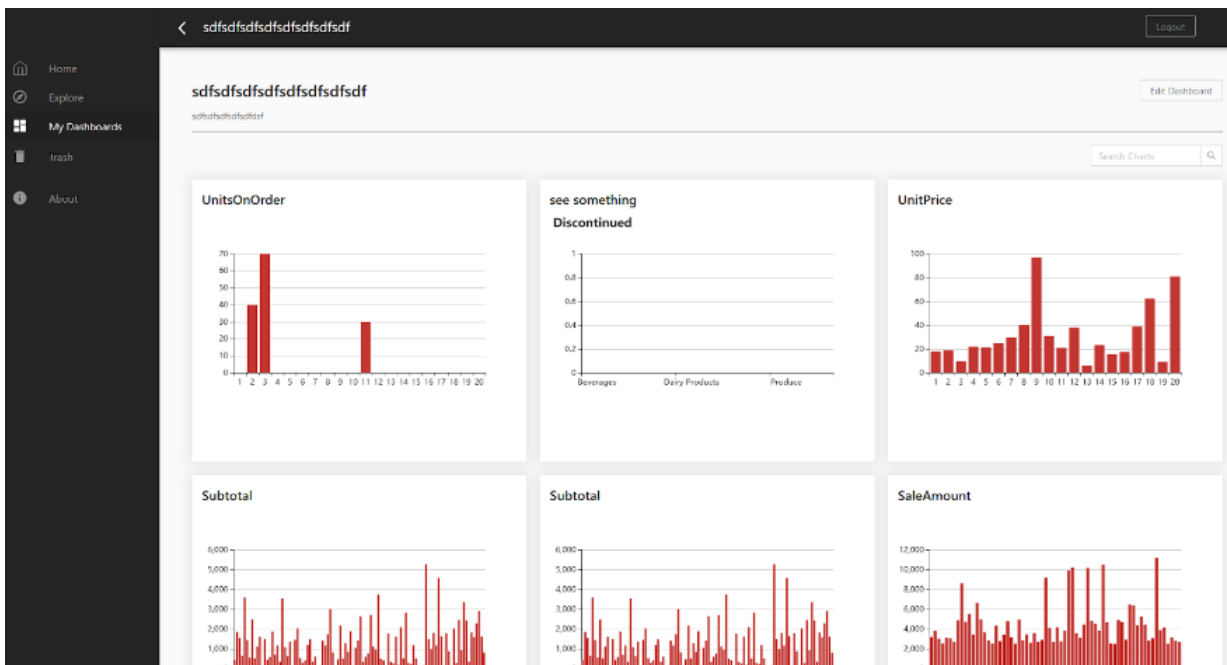
If not logged in, the user will instead be prompted to login or sign up with an email and password.



A login form titled "Login" with a close button (X) in the top right corner. It contains two input fields: "E-mail:" and "Password:". The "E-mail:" field has a red asterisk to its left. The "Password:" field has a red asterisk to its left and a small eye icon to its right. Below the input fields is a checkbox labeled "Remember me" which is checked. At the bottom are two buttons: "Login" and "Sign Up".

5.6 Dashboard View

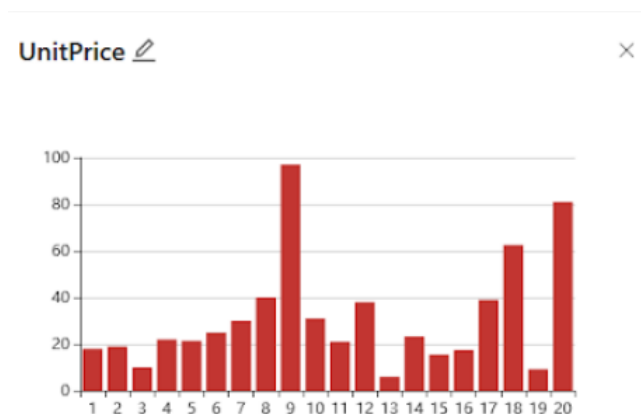
When selecting a dashboard the user will be directed to this page, displaying all the graphs saved to the dashboard.



The dashboard title and description is displayed at the top, with an 'Edit Dashboard' button on the right. This is followed by the saved dashboards and a search bar.

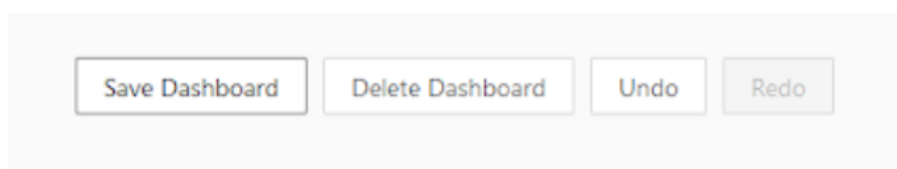
The **search bar** can be used to find a specific graph by name.

The **'Edit Dashboard'** button will allow the user to edit graphs and the dashboard. After selecting it the graphs will look as follows:



Clicking on the name will allow the user to change the graph name, while clicking the X will delete the graph from the dashboard.

The dashboard will have new buttons, with an editable name and description similar to the editable chart names. These new buttons are as follows:



'Save Dashboard' will save any changes made to the dashboard and exit this view. **'Delete Dashboard'** will delete the dashboard from the user's account. **'Undo'** will undo the last change(s), while **'Redo'** will redo the changes that were undone.

6 Troubleshooting

1. Graphs are empty

Some graphs will appear without any data and thus just two axes with an empty plane. This is just a suggestion being generated with data that doesn't translate well to graphs (such as names). The team will provide a solution to this soon.

2. Pages aren't loading

Pages might not load for a variety of reasons: Slow connection, overwhelmed server, etc. Try refreshing your page or wait for the servers to be less overloaded. If the problem persists then contact the team at doofenshmirtz.evil.inc.cos@gmail.com

3. The app won't launch after typing npm start

Check the installation section earlier for setup before running the app. We are aware of an issue where the app does not launch for other reasons, in which case it will likely be fixed by deleting and reinstalling.

Most of the troubleshooting is done on our side, so if any other issues occur please contact us at doofenshmirtz.evil.inc.cos@gmail.com.