FH University of Applied Sciences TECHNIKUM WIEN

Documentation & Project Diary

Innovation Lab 3
Year 2022/2023

Project: Real-Time Dashboards with Dash Open Source

Team:

- Ahmet Satilmis – if19b095
- Ledion Rejzi – if19b504
- Anis Shkembi – if19b505

1. General Information

Project name: Real-Time Dashboards with Dash Open Source

Supervisor: Tobias Hildebrandt

Innovation Lab *2, summer term 2022*

Project Team:

Name	e-Mail	Role
Ahmet Satilmis	if19b095@technikum-wien.at	Project Manager
Ledion Rejzi	if19b504@technikum-wien.at	Project Member
Anis Shkembi	if19b505@technikum-wien.at	Project Member

Management Summary of the Project

This project aims to read, save, and visualize the data of the New York traffic accidents with the help of the NYC Motor Vehicle Collisions API on our webpage. The project does will have a more efficient update process. With the use of an update page, the webpage will always be online. The project will also contain different checkboxes to filter our plotly components.

Project priorities

1. *Implementing a new layout*
2. *Fixing previous bugs*
3. *More efficient update process*
4. *Adding update page, during the data update process*
5. *Publishing the Pages*

Framework Conditions and Project Environment

Python is chosen as the project language. For Python use, PyCharm on Anaconda is selected as the editor. The data received by the NYC Motor Vehicle Collisions API will be stored in a database and simultaneously visualized on our website. At this stage, MySQL has been determined as the database. Although the web page is written on Python, HTML, CSS , Dash and Bootstrap languages and libraries will also be used in the development of the web page.

Semester-Roadmap

	TASKS	TASK NAME	ASSIGNED TO	START DATE	END DATE	DURATION
1st Milestone	1	Research	All Members	01.10	10.10	40 Hours
	1.1	Team Meeting	All Members	10.10	10.10	1 Hour
	1.2	Meeting with teacher	Anis	06.10	06.10	1 Hour
2nd Milestone	2	Project Planning	All Members	15.10	19.10	10 Hours
	2.1	Creating Mockup	Ahmet	19.10	22.10	5 Hours
	2.2	Team Meeting	All Members	22.10	22.10	2 Hours
	2.3	Changing website color according to internet guidelines and removing hardcoded text	Anis	23.10	24.10	5 Hours
	2.3.1	Adding the graph checkboxes	Ledion	24.10	26.10	5 Hours
3rd Milestone	3	New graphs implementation	Ledion	30.10	05.11	30 Hours
	3.1	Team Meeting	All Members	05.11	05.11	1 Hours
	3.2	Dividing the data and deciding what to show when inserting the dropdown menus for certain graphs	Ahmet	05.11	10.11	15 Hours
	3.2.2	Adding different dropdowns for different graphs and maps	Ledion	10.11	15.11	15 Hours
	3.3	Implementing new maps	Anis	15.11	20.11	15 Hours
	3.4	Exploring graph options for the project and thinking about new features	All Members	20.11	22.11	5 Hours
4th Milestone	4	Implementing new layout	All Members	25.11	25.12	50 Hours
	4.1	Team Meeting	All Members	05.12	05.12	1 Hours
	4.2	All the Hardcoded text turned into a more structured and comprehensible code	All Members	06.12	10.12	10 Hours
	4.3	Implementing the new Features and Graphs already planned from point 3.4	All Members	15.12	25.12	10 Hours
5th Milestone	5	Faster update process for the user	Anis	05.01	05.02	50 Hours
	5.1	Team Meeting	All Members	05.02	05.02	1 Hour

	5.3	Code testing, error corrections and final implementations before presentation	All Members	05.02	08.02	30 Hours
6th Milestone	**6**	Documentation of the project	Ahmet & Anis	08.02	08.02	20 Hours
	6.1	Team Meeting	All Members	08.02	08.02	1 Hour
	6.2	Final Presentation and documentation	All Members	08.02	10.02	20 Hours

Collaboration & Tooling

Link for GitHub:
https://github.com/ShkembiAnis/DashboardRealTime.git

Link for Zoom Meetings:
https://technikum-wien-at.zoom.us/j/92900274815?uname=Satilmis%20Ahmet#success

Link for Discord:
https://discord.gg/VMRneCyM

2. Brief Description of the Project

The Real-Time Dashboards with Dash Open-Source project aims to simultaneously visualize all traffic accidents in New York on our website. The necessary data for this will be obtained through the NYC Motor Vehicle Collisions API.

Project process

- *Required data is read with the help of NYC Motor Vehicle Collisions API.*
- *This data is stored in our own MySQL library.*
- *Data read through MySQL are visually reflected on our web page with the help of the Dash library.*
- *Data's will be sorted to the classes (Data Frame or Np.array)*
- *An admin panel will be added to the page with CRUD method*
- *Improving the pages for better UI.*

Additional processes

- *Time and task distribution planning is done in order to deliver the project on the targeted date and to get maximum efficiency from the team members.*
- *Risk analysis is made for possible problems.*

Project team goals

Our aim is to deliver the project as a plug-in function on the desired date.
The team members are also expected to improve themselves in several areas during this project. These areas are teamwork, time management, task distribution, communication, problem reporting, risk analysis.
In addition, the team is expected to increase their skills in using Python, Dash, PyCharm, HTML, CSS, Bootstrap, Flask and MySQL.

3.Sprints

1. Sprint:

- Define the roadmap for this semester
- Complete the Effort Estimation Step
- Define the specification of the solution
- Clarify and identify project aims
- Change the background color of the website
- Remove hardcoded text within the graphs
- Decide on the graph filters dropdown options

2. Sprint:

- Add a side slider with graphs on the first page
- Add graph filters (checkbox)
- Reformat the layout mockup
- Documentation

3. Sprint:

- Changing graph positions and website layout
- Implement graph filters on Map
- Add new graphs to the layout
- Documentation

4. Sprint:

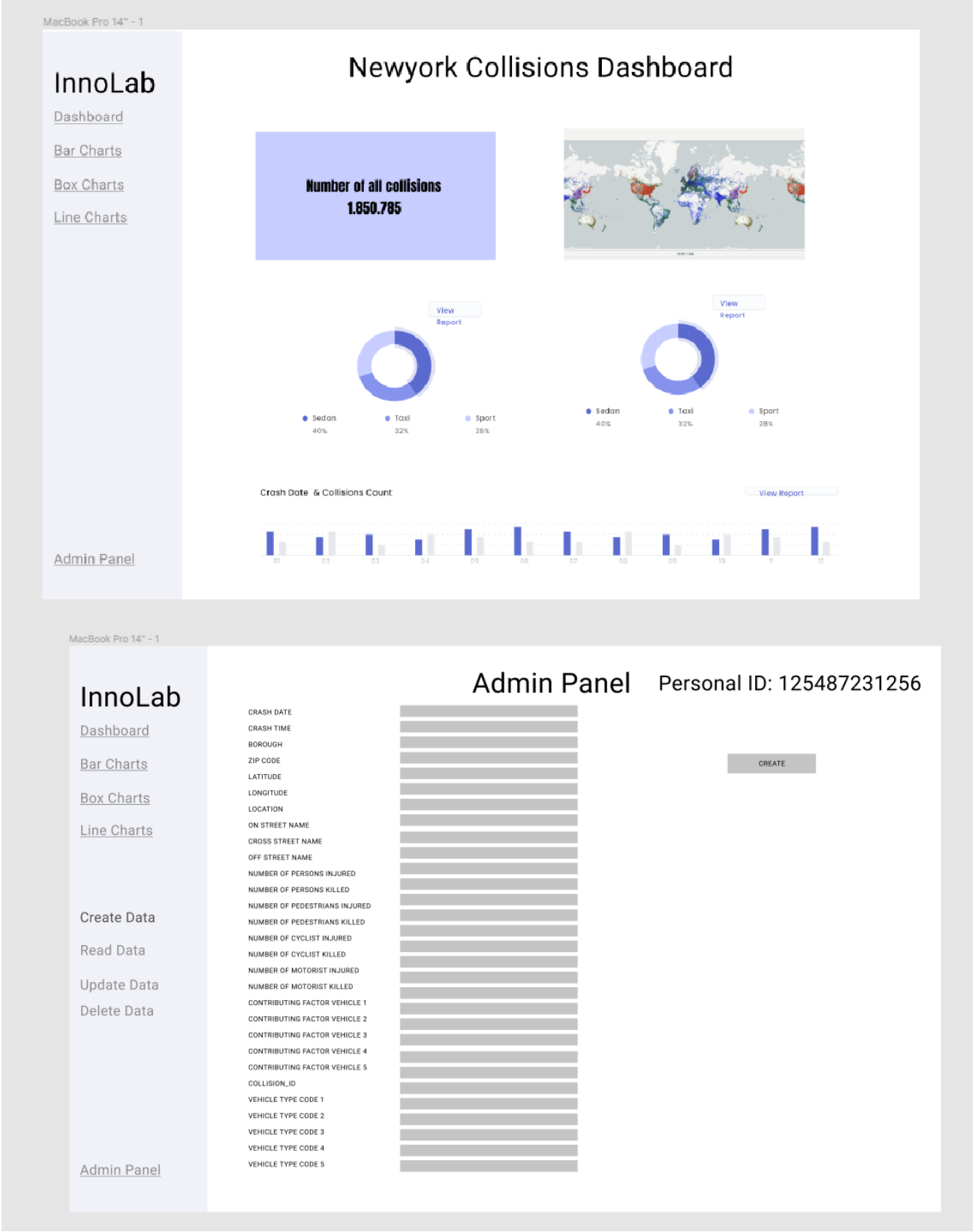
- MongoDB research and implementation
- Finish the layout
- Update the functions with the new MongoDB
- Documentation

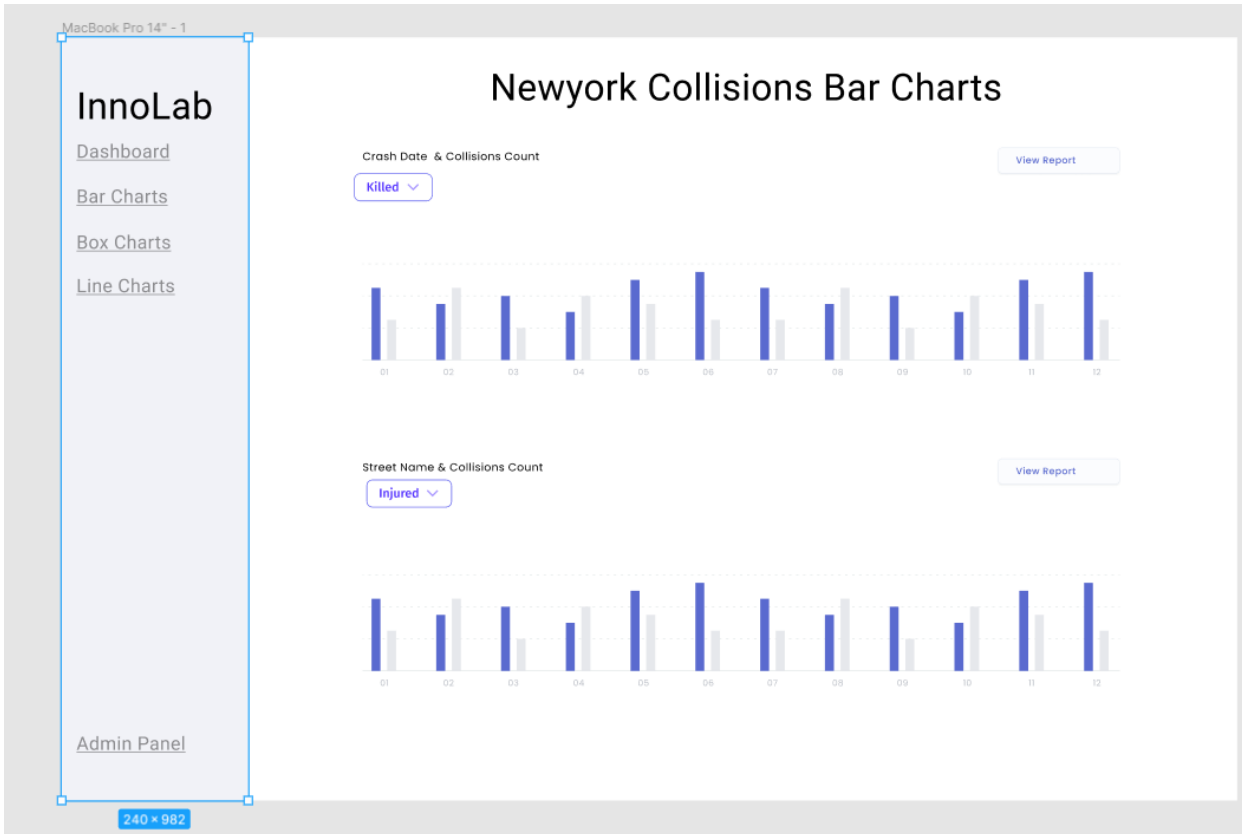
5. Sprint:

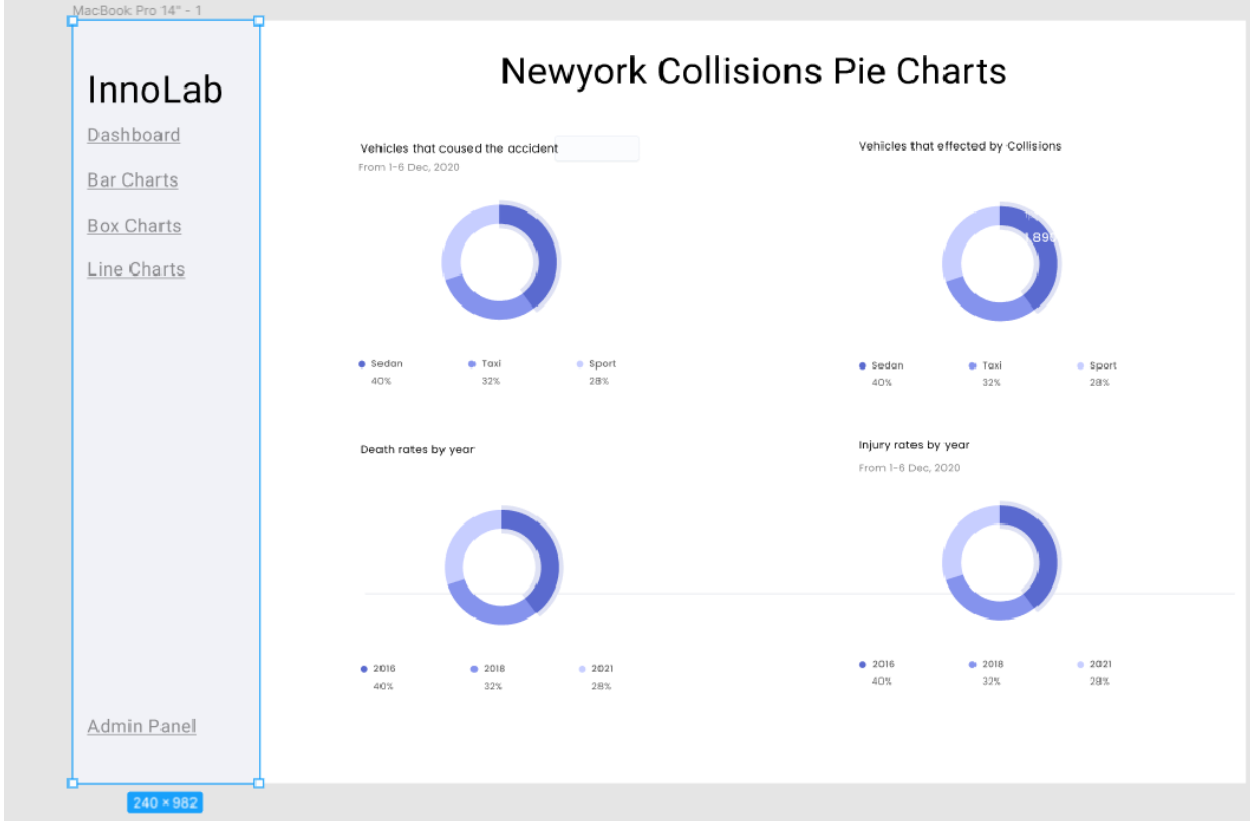
- Continue with MongoDB implementation
- Improve the layout
- Fix bugs on the website
- Documentation

4. Mockups

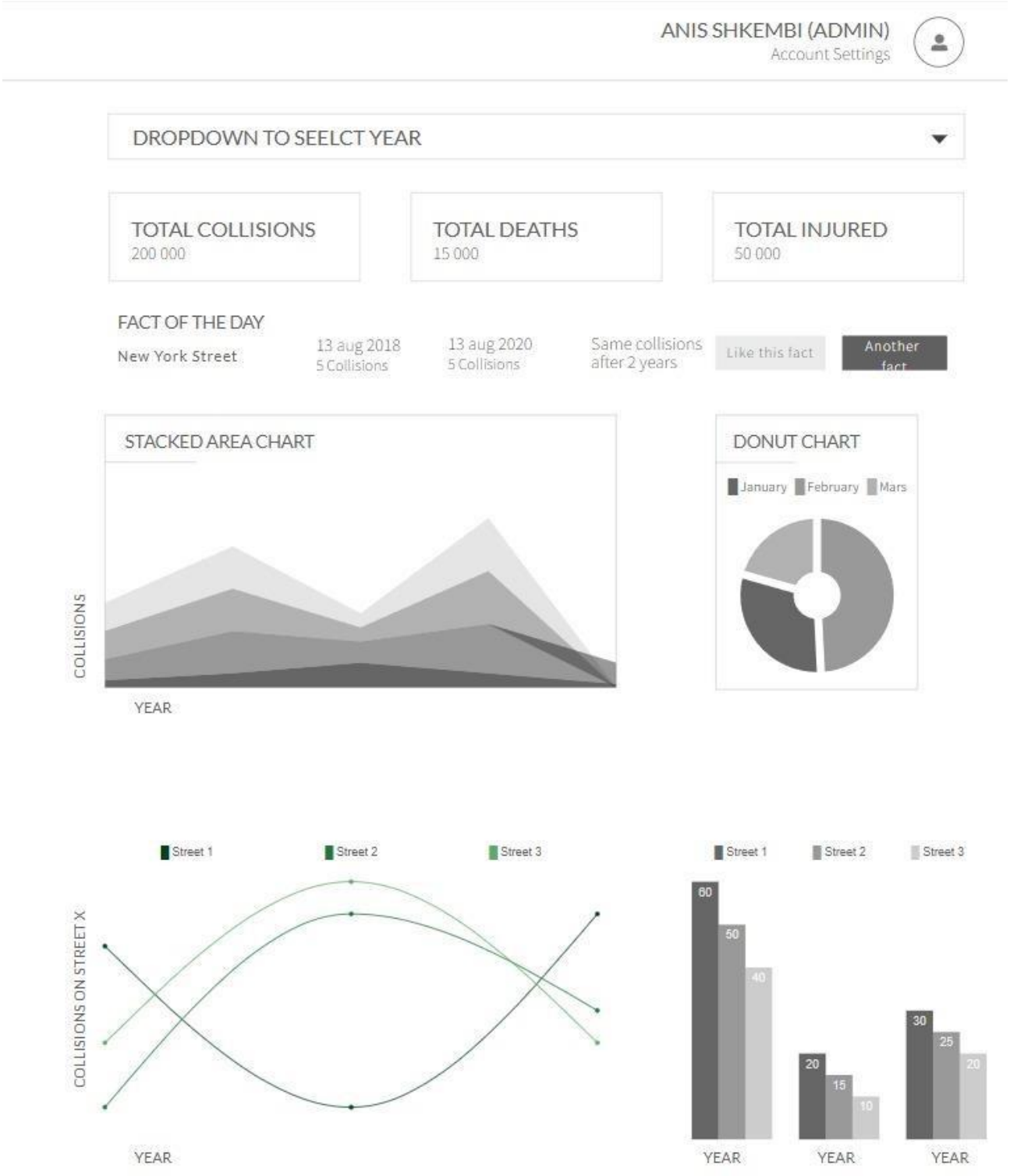
1. Mockup

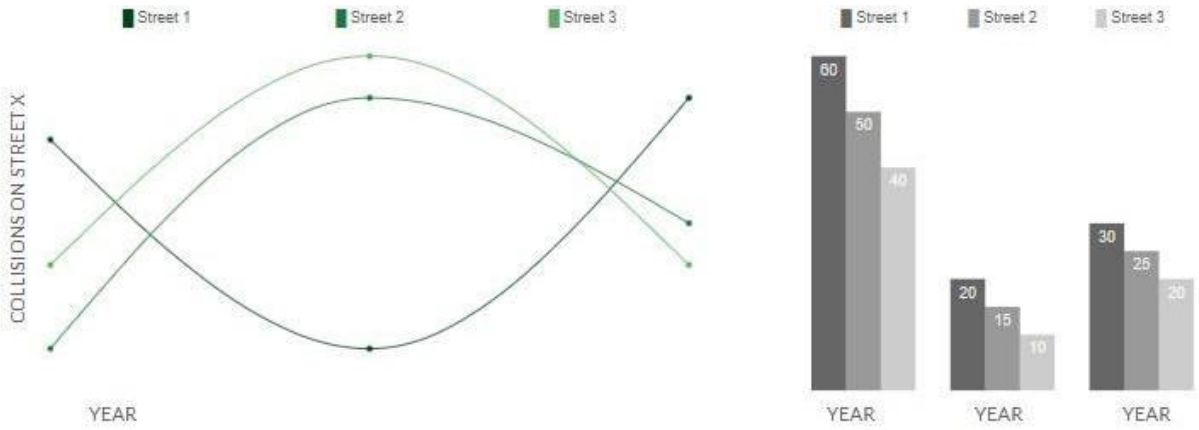


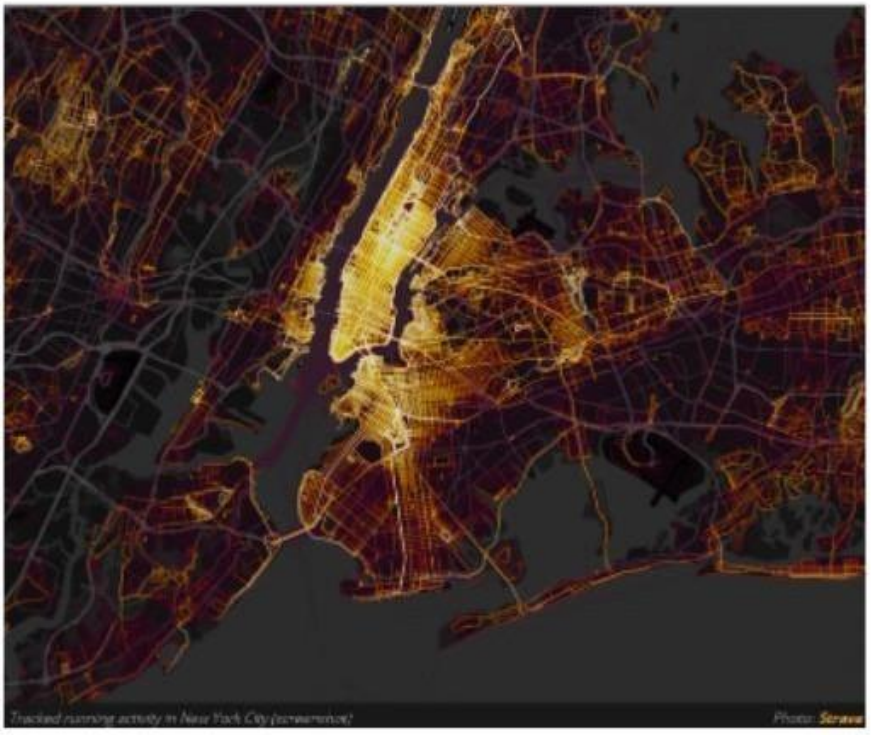

MacBook Pro 14" - 1
InnoLab
Dashboard
Bar Charts
Box Charts
Line Charts
Admin Panel
240 × 982
Newyork Collisions Bar Charts
Crash Date & Collisions Count
Killed
View Report
Street Name & Collisions Count
Injured
View Report


MacBook Pro 14" - 1
InnoLab
Dashboard
Bar Charts
Box Charts
Line Charts
Admin Panel
240 × 982
Newyork Collisions Pie Charts
Vehicles that coused the accident
From 1-6 Dec, 2020
Sedan 40%
Taxi 32%
Sport 28%
Vehicles that effected by Collisions
Sedan 40%
Taxi 32%
Sport 28%
Death rates by year
2016 40%
2018 32%
2021 28%
Injury rates by year
From 1-6 Dec, 2020
2016 40%
2018 32%
2021 28%

2. Mockup


ANIS SHKEMBI (ADMIN)
Account Settings
DROPDOWN TO SEELCT YEAR
TOTAL COLLISIONS
200 000
TOTAL DEATHS
15 000
TOTAL INJURED
50 000
FACT OF THE DAY
New York Street
13 aug 2018
5 Collisions
13 aug 2020
5 Collisions
Same collisions
after 2 years
Like this fact
Another fact
STACKED AREA CHART
COLLISIONS
YEAR
DONUT CHART
January
February
Mars
Street 1
Street 2
Street 3
COLLISIONS ON STREET X
YEAR
Street 1
Street 2
Street 3
60
50
40
20
15
10
30
25
20
YEAR
YEAR
YEAR

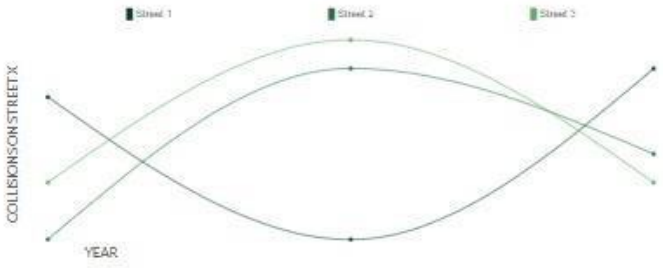




HEAT MAP FOR YEAR X

ANIS SHKEMBI (ADMIN)
Account Settings

DROPDOWN TO SEELCT YEAR

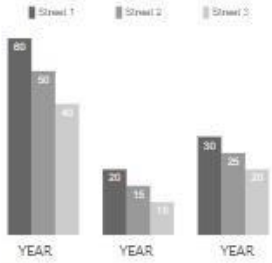


TOTAL COLLISIONS
200 000

TOTAL INJURED
50 000

TOTAL DEATHS
15 000

INTERESTING FACT
The same thing happened today as it did 2 years ago



HEAT MAP FOR YEAR X

YEAR DATA TABLE

January	x Collisions
February	x Collisions
Mars	x Collisions
April	x Collisions
May	x Collisions
June	x Collisions
July	x Collisions
August	x Collisions
September	x Collisions
October	x Collisions
November	x Collisions
December	x Collisions

ANIS SHKEMBI (ADMIN)
Account Settings

DROPDOWN TO SEELCT YEAR

TOTAL COLLISIONS
200 000

TOTAL INJURED
50 000

TOTAL DEATHS
15 000

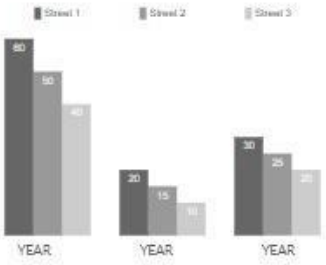
INTERESTING FACT
The same thing happened today as it did 2 years ago

DONUT CHART

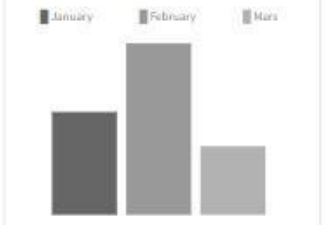
YEAR DATA TABLE

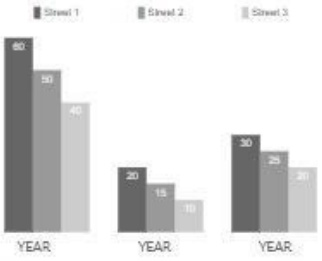
January	x Collisions
February	x Collisions
Mars	x Collisions
April	x Collisions
May	x Collisions
June	x Collisions
July	x Collisions
August	x Collisions
September	x Collisions
October	x Collisions
November	x Collisions
December	x Collisions

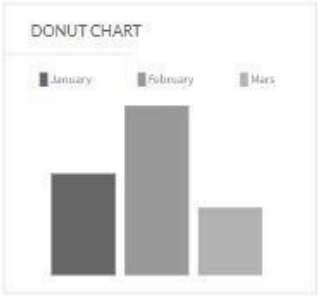
HEAT MAP FOR YEAR X



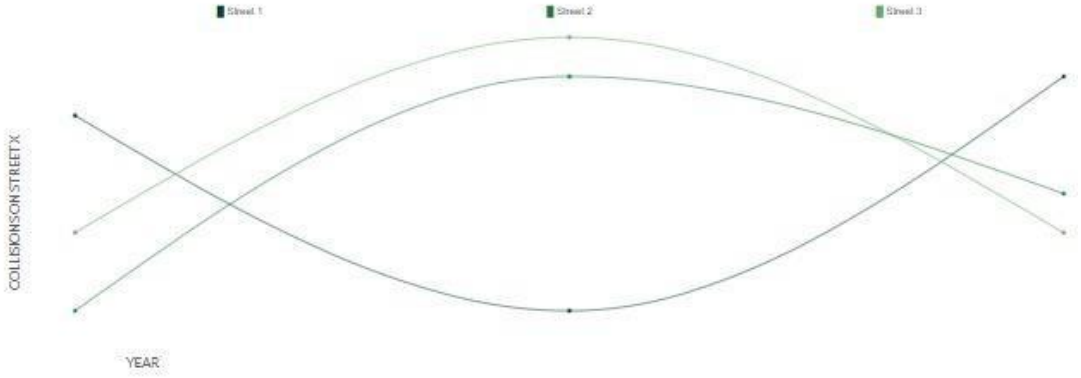
DONUT CHART







HEAT MAP FOR YEAR X



5. Specification of the Solution

TASK NUMBER	TASK NAME	TASK OVERWIEV
1	Research	Learning necessary technologies
2	Project Planning & Installation & Creating Mockup	Project planning and mockup will be created.
3	Changing project layout	Displaying the graphs in a different way
4	Adding new dropdowns and slider	Redesigning the first overview of the website
5	Implementing graph checkboxes	More options for every graph to show data
6	Add new maps for slider	New maps other than the heat map
7	Implementing a faster update process	Data will be updated faster on property changes
8	End documentation and presentation	Preparation and presentation of detailed documentation of the project

	WORK PACKAGE	DURATION
1	Research & Project Planning	40
2	Installation	20
3	Creating the first App prototype	200
4	Testing and Updates	50
Total: 290 hours + 20 hours buffer time		

1 & 2 Task:

- Project preliminary research was done.
- Talking about the changes.
- The first mockup was created. Figma has been used.
- The original data has been added to the MySQL database

6. Effort Estimation

Delphi Technique

The Delphi Technique is a method used to estimate the likelihood and outcome of future events. It is a tool which can be used to reach consensus amongst a group of people and it is suited to avoid the estimation errors like: quantity errors, rate errors and the errors of omission.
Estimates are initially provided anonymously by a group of experts. It is also important that the estimation be done individually so that estimates are not biased (Benjamin effect, Bandwagon effect).

The Delphi Technique Process has 5 Steps:

- *First a panel of experts is assembled.*
- *Tasks are set and distributed to the experts.*
- *Experts return initial forecasts and justifications.*
- *Feedback is provided to experts.*
- *Final forecasts are constructed.*

7. Delivery

This part will be written after Project is done.

8. Our Project Diary

Meeting on 10.10.2022 we met about the first sprint and on 18.10.2022 we reviewed our work and set the tasks for the second one.

Meeting on 25.10 to discuss about the second sprint and divide the work. We talked about how are we going to approach the differences we are going to make.

Meeting on 15.11 to discuss about the third sprint and review the feedbacks. We talked about how are we going to implement the new MongoBB Database.

Meeting on 16.12 to discuss about the fifth sprint tasks. We discussed about the fixing of the problems created by the new database.

Meeting on 20.01.2023 to discuss about the final steps and documentation. We decided on how to make the video and write the paper.