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Department of physics

Project title: Visualization Tool for Electric Vehicle Charge and Range Analysis

Projects students:
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1.Introduction

1.1 Overview

In recent years, there has been an upsurge in electric vehicles (EVs) as the cost of the electricity required to charge an EV is much less than the cost of using petrol for a similar-sized vehicle driving the same distance. In addition, EVs are easy to power from local and renewable energy sources, which reduces the global crisis of oil dependence. Moreover, choosing to drive an EV helps to reduce harmful air pollution from exhaust emissions. However, despite the many benefits of EVs, full-pledged research is still required into EV charging techniques and infrastructures.

At present, the main area of research in both industry and academia is the upgrading of EV charging and charging station technologies. Therefore, theoretical studies, practical experiences, and deep research into EV charging technologies are required for the establishment of charging stations and the sustainable development of the global market.

This Special Issue invites authors to contribute research articles focusing on EV technologies and their charging techniques. We hope to gather research in relevant fields from around the world on the analysis, technology, methods, and implementation of EVs and to positively contribute to the sustainable development of the transportation sector. We aim to report the latest obstacles, challenges, mathematical problems, and opportunities facing the transportation sector in establishing sustainable growth.

1.2 Purpose

The purpose of the project is to use data analyzation techniques to analyse the given data of the hotel functionalities. By analysis the previous data we try to figure out the best possible future solutions.

Today's data visualization tools are efficient enough to help you refine this data, analyze it to gain useful insights, and interact with data to get your queries resolved. Where all these factors affect decision-making, the future of data visualization has much more to offer.

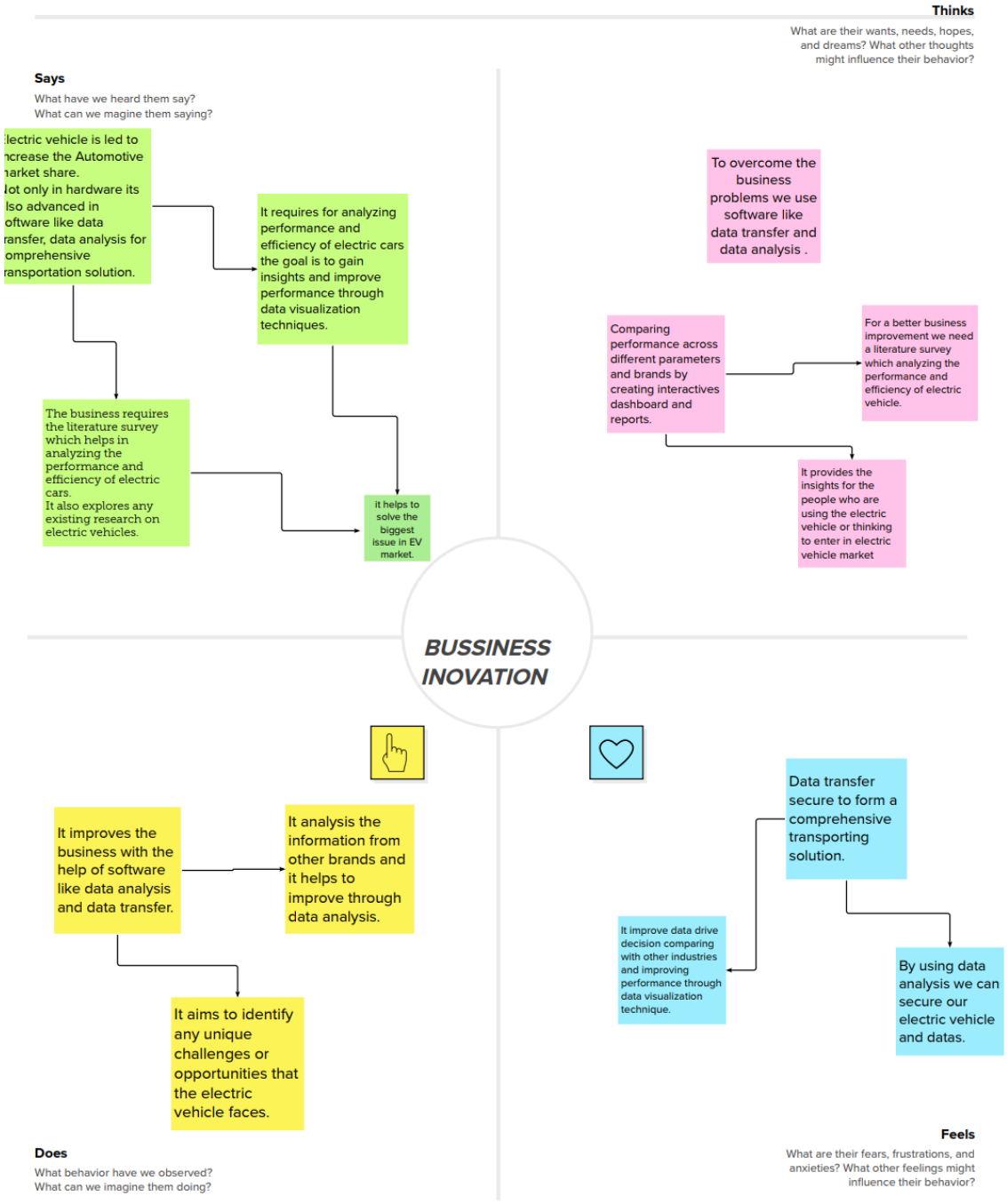
The data-related complexities are causing frequent and rapid changes in technology, and data visualization services are no exception. What should businesses expect from this technology in the upcoming years? How robust will this technology become, say, in the next 5–10 years? Will the investments those businesses are making in data visualization result in success even after a period? What points should organizations consider before contacting data visualization solution providers for tools and technologies?

2.Problem definition and design thinking:

2.1 Empathy map :

Build empathy

The information you add here should be representative of the observations and research you've done about your users.



2.2 Brainstorm and idea prioritization:

1

Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

5 minutes

PROBLEM

The Electric Vehicle (EV) is not new, but it has been receiving significantly more attention in recent years

Key rules of brainstorming

To run an smooth and productive session

- Stay in topic.
- Encourage wild ideas.
- Defer judgment.
- Listen to others.
- Go for volume.
- If possible, be visual.

2

Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

TIP

You can select a sticky note and hit the pencil [switch to sketch] icon to start drawing!

K.SANTHIYA

Electric cars accelerate faster than vehicles with traditional fuel engines – so they feel lighter to drive.

Electric cars function by plugging into a charge point and taking electricity from the grid.

They store the electricity in rechargeable batteries that power an electric motor, which turns the wheels.

S.VINITHA

We can reduce the environmental impact of charging your vehicle further by choosing renewable energy options for home electricity.

Driving an electric vehicle can help you reduce your carbon footprint because there will be zero tailpipe emissions.

Compared to internal combustion engine (ICE) vehicles, electric cars are quieter, have no exhaust emissions, and lower emissions overall.

T.SEMMAYIL

An electric car battery electric car, or all-electric car is an automobile that is propelled by one or more electric motors, using only energy stored in batteries.

One limitation of the environmental potential of EVs is that simply switching the existing privately owned car fleet from ICEs to EVs will not free up road space for action based on public transport.

Electric vehicles are the future of mobility, and we all know how it can have a positive impact on our planet

A.RESHMUGISHA

Electric vehicles have a huge role to play, when it comes to eco-friendly transportation.

Driving an electric vehicle can help you reduce your carbon footprint because there will be zero tailpipe emissions

An electric car can be a great way for you, as a consumer, to save a lot of money on gas and also help contribute towards a healthy and stable environment

Person 5

Two emissions from petrol and diesel vehicles lead to long-term, adverse effects on climate. The CO2 emissions impact of electric vehicles is much lower than petrol or diesel vehicles

Electric vehicles will require significant expansion of EV charging infrastructure, as well as technological innovations.

Electric vehicles can reduce fuel costs dramatically because of the high efficiency of electric-drive components.

Person 6

Person 7

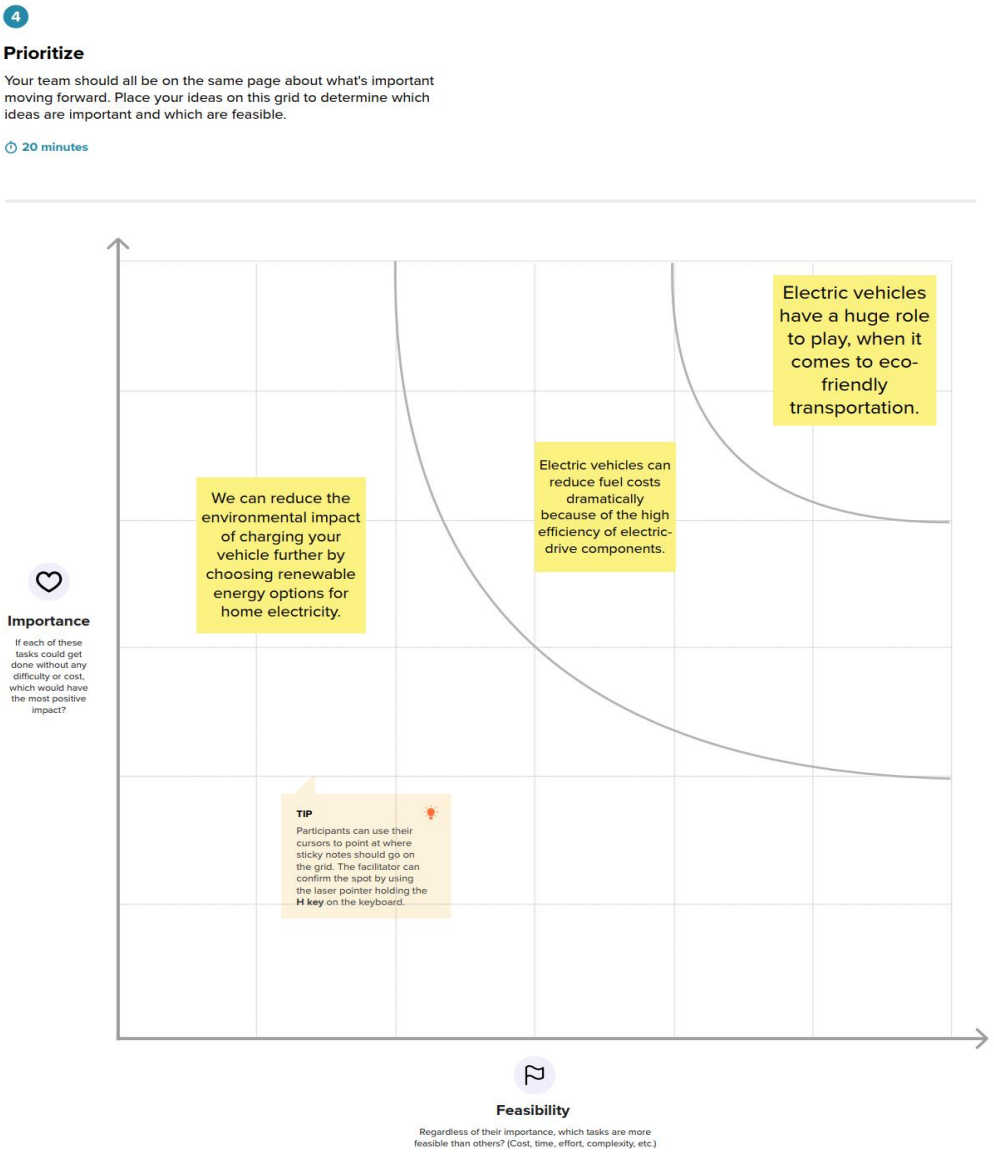
Person 8

3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.

20 minutes



4.Advantages:

Electric vehicles use electricity to charge their batteries instead of using fossil fuels like petrol or diesel. Electric vehicles are more efficient, and that combined with the electricity cost means that charging an electric vehicle is cheaper than filling petrol or diesel for your travel requirements.

Disadvantages:

The most significant disadvantage of electric vehicles is that they must be charged regularly. Aside from that, increasing the weight of these vehicles reduces their capacity. Electric cars with little energy and capacity can sometimes fall behind fuel-powered ones.

5.Applications:

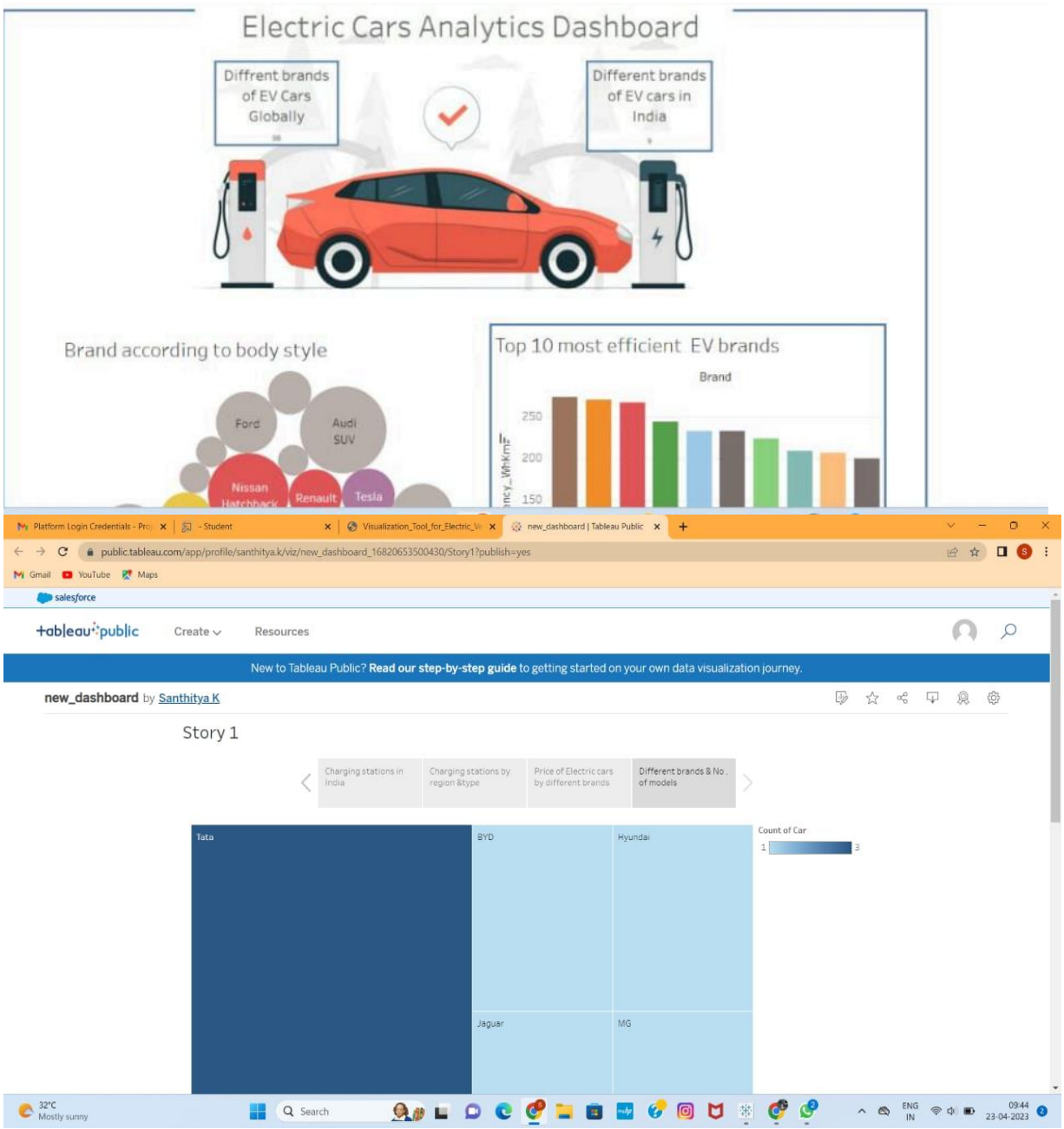
The visualization tool for Electric Vehicle Charge and Range Analysis is used in the electric motors, batteries, inverters, wiring and in charging stations because of its durability, malleability, reliability and superior electrical conductivity.

6. Future scope:

According to studies, 90 percent of the information the human brain grasps comes from visuals, and intelligently designed infographics make a 30 percent better choice over plain text. These stats represent how visualization can be helpful for your business to achieve new heights in the data-driven future.

Visuals aren't only more comfortable to understand but also produce a more convincing argument. Tableau finds that business managers with visual analysis and exploration tools are 28% more likely to get timely information than those who depend on managed reporting. The same report also reveals, 48% of these managers could reach information without IT assistance. The future of data visualization will depend on this capability to wrap information scattered over reports and spreadsheets into sensible visuals and provide it to end-users and the target market segments. Data science technologies such as Business Intelligence and Analytics are making modern businesses smarter. AI-based visualization makes data discovery a quick and easy job. What's more, it assists users in finding the information they are looking for and also makes recommendations that convert into benefits. Machine learning (ML) and natural language processing (NLP) can be deployed to divulge crucial insights from data, reducing the data visualization workload for humans

7.Result:



8.Conclusion:

Visual profiling of large datasets can only be ensured with data visualization. Over time, data visualization has gained reliance by acquiring robustness and flexibility. Visualization enables users to access data, extract actionable insights, and decide on a suitable course of action while making way through the complexities. The future of data visualization will continue empowering visualizers by providing robust and reliable means for storytelling, data journalism, social media integration, self-service BI, and mobile support.