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Lepre Tracker: Small Choices, Big Change

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Abstract: ***Lepre Tracker is a holistic sustainability app that empowers individuals to adopt and maintain an eco-friendly lifestyle. It tracks key areas such as energy use, food consumption, transportation habits, and community practices, providing real-time feedback, goal setting and progress visualization.***
The app raises environmental awareness through tips and insights, encouraging users to make informed decisions that lower their carbon footprint.
Unlike fragmented systems, Lepre Tracker offers a unified platform for sustainable habit tracking, making environmental responsibility a part of everyday life.By fostering motivation, education, and accountability, it enables users to create a lasting positive impact--one habit at a time.
Keywords: Sustainability app, eco - friendly lifestyle, real-time feedback, goal-setting, progress visualization and unified platform.

I. INTRODUCTION

As climate change and environmental damage affect us all, it is now more important than ever for people to be responsible for what they do. Things we do daily, such as the food we consume, the way we travel, and our energy usage-- affect the environment. Many individuals do not have the skills or drive to monitor and improve how sustainable they are.

Lepre Tracker allows people to track their daily routines and see how their actions affect the environment in an accessible and straightforward way. Users input details about how much energy they use, what they eat, how they get around, and what they do in their community, and the app delivers real-time guidance and information. Lepre Tracker's systems for goal setting, habit monitoring, and tracking results ensure users can monitor and lower their impact on the environment.

Lepre Tracker is unique for combining education and action. The app helps you determine your carbon footprint and suggests steps to reduce it, as well as offering badges and leader-boards. By presenting sustainability in a clear and understandable way, Lepre Tracker helps users establish practices that matter for the environment.

II. LITERATURE SURVEY

Evaluating carbon footprints is useful both for finding out how much damage humans do to the environment and for trying to fix it.

In 2008, Wiedmann and Minx first explained that a carbon footprint covers both the direct and indirect emissions from people, groups, or items. They introduced a method for turning different types of carbon emissions into CO2-equivalents, enabling better comparisons between different industries.

Pandey et al., in their 2011 study [2], examined how businesses use carbon accounting and how it helps them manage and cut emissions. Using carbon calculators made it easier for sustainability strategies to accurately measure their energy use and look into ways to cut down on carbon footprint.

In 2019, Anderson et al.[3] looked into using mobile apps and IoT devices for continuous carbon footprint tracking in real time. With these technologies, you can see the amount of carbon dioxide released from your activities. GreenSteps and Carbon Footprint Tracker show daily actions and how they relate to carbon emissions.

As reported by Boudet et al.(2018) [4], there are various issues in measuring emissions, with data accuracy being a major one, especially related to those from supply chains. It is challenging to ensure equal results for emissions data between different industries due to the complexity of relevant calculations. Additionally, Boudet pointed out that many areas with limited technology struggle to make use of these tools, blocking global progress in reducing greenhouse gas emissions.

Barrett and others in 2020 highlighted the significance of measuring and tracking carbon emissions to achieve climate goals mentioned in Paris Agreement.

Officials observed that government regulations are incorporating carbon tracking tools more frequently, making it possible to have reliable and trustworthy emissions data across companies.

III.PROPOSED METHODOLOGY

The technologies used in Lepre Tracker are:

1) Front-end Technologies

- HTML - Structure of web pages
- CSS - Styling for responsive and aesthetic designs.
- JavaScript – Enhance user interaction.

2) Back-end Technologies

- PHP - Server-side scripting language for logic and interaction.
- MySQL – Database to store user data, performance reports.

3) Development and Execution tools

- XAMPP – Local server stack for running PHP and MySQL.
- Visual Studio Code – Integrated Development Environment (IDE).

4) Formulas

a) Travel

Different transport modes emit differently based on the fuel type, distance and vehicle efficiency.

For each category (Flight, Car, Transport):

Percentage = (user emission)/(max emission)*100

User emission is based on given input using emission factors

Max emission is constant to each category

Let's calculate for flights-

1. Distance travelled = 1000km
2. Number of flights = 2
3. Flight class = Economy
4. Emission factor for economy(constant) = 0.115kg CO2/km
5. Max emission = 289.09kg CO2

User emissions = number of flights*emission factor*distance travelled
= 2*0.115*1000
= 230kg CO2

Percentage = 230/289.09*100
= 79.56%

Let's calculate for cars –

1. Distance travelled = 300km/week so 15600km/year
2. Car age = After 2000
3. Car type = Petrol
4. Emission factor of petrol(constant) = 0.271kg CO2/km
5. Max emissions = 4608.24kg CO2

User emissions = distance travelled*emission factor
= 15600*0.271
= 4236.6 kg CO2

Percentage = 4236.6/4608.24*100
= 91.74%

Let's calculate for some mixed transportation modes –

S.NO	MODES	PERCENTAGE	EMISSION FACTOR
1	Drive	40	0.271
2	Carpool	20	0.135
3	Walk	15	0.0
4	Cycle	5	0.0
5	Train	10	0.041
6	Bus	10	0.105

Max emissions = 0.701 kg CO2/km
User emissions = 40*0.271+20*0.135+15*0+5*0+10*0.041+10*0.105
= 0.214 kg CO2/km

Percentage = 0.214/0.701*100
= 21.41%

b) Food

Dietary impact is based on food type and frequency of consumption.
For each category (food emission, food source, dining score)

Percentage = (user emission)/(max emission)*100
User emission is based on given input using emission factors
Max emission is constant to each category

Let's calculate for food emission -

1. Diet Type = Vegetarian
2. Average daily calories = 1800
3. Max emission = 10kg CO2
4. Emission factor of vegetarian(constant) = 3.27 CO2/kcal

User emissions = calories/1000*emission factor
= 1800/1000*3.27
= 5.886 kg CO2
Percentage = 5.886/10*100
= 58.86%

Let's calculate for food source –

S.NO	FACTOR	POSSIBLE WEIGHT	USER INPUT	SCORE
1	Shop locally	20	Yes	20
2	Local produce	20	40	20*0.40 = 8
3	Organic	20	10	20*0.10 = 2
4	Eat seasonal fruits	20	Yes	20
5	Grow food	20	No	0

Percentage = 20+8+2+40+0
= 50%

Let's calculate for dining score –

1. Eat out weekly = Yes [50 if no and 0 if yes]
2. Waste food regularly = No [50 if no and 0 if yes]

Percentage = 50%

c) Energy

Most of the energy is contributed by electricity and fuel consumption.

Let's calculate –

S.NO	SOURCE	AMOUNT	EMISSION FACTOR
1	Electric	1200kWh	0.2111kg CO2/kWh
2	Natural Gas	3000kWh	0.185kg CO2/kWh
3	Oil	50litre	2.68kg CO2/litre
4	Coal	1tonne	2410kg CO2/tonne
5	LPG	140litre	1.51kg CO2/litre
6	Propane	200kWh	0.23 kg CO2/kWh
7	Wood	1tonne	112 kg CO2/tonne

1. Electric = 1200*0.2111 = 253.32kg CO2
2. Natural Gas = 3000*0.185 = 555kg CO2
3. Oil = 50*2.68 = 134 kg CO2
4. Coal = 1*2410 = 2410 kg CO2
5. LPG = 140*1.51 = 211.4 kg CO2
6. Propane = 200*0.23 = 46kg CO2
7. Wood = 1*112 = 112 kg CO2

User emissions = 253.32+555+134+2410+211.4+46+112
= 3721.72 kg CO2
Max emissions = 3893.3kg CO2

Percentage = 3721.72/3893.3*100
= 95.61%

d) Community

Waste is contributed least mainly household garbage and recycling.

.

Let's calculate for recycling table

S.NO	SOURCE	CHECKED	ESTIMATED CO2
1	Metal packaging	No	24
2	Paper/cardboard	Yes	27
3	Plastics	Yes	34
4	Glass	No	12
5	Food Waste	Yes	38.29

Total = Σ CO2 saved
= 27+34+38.29
= 99.29kg

Let's calculate for Volunteering table

S.NO	SOURCE	CHECKED	POINTS
1	Planting trees	Yes	35
2	Community gardens	No	6
3	Protecting wildlife	No	8
4	Ocean cleanup	No	9
5	Others	No	7

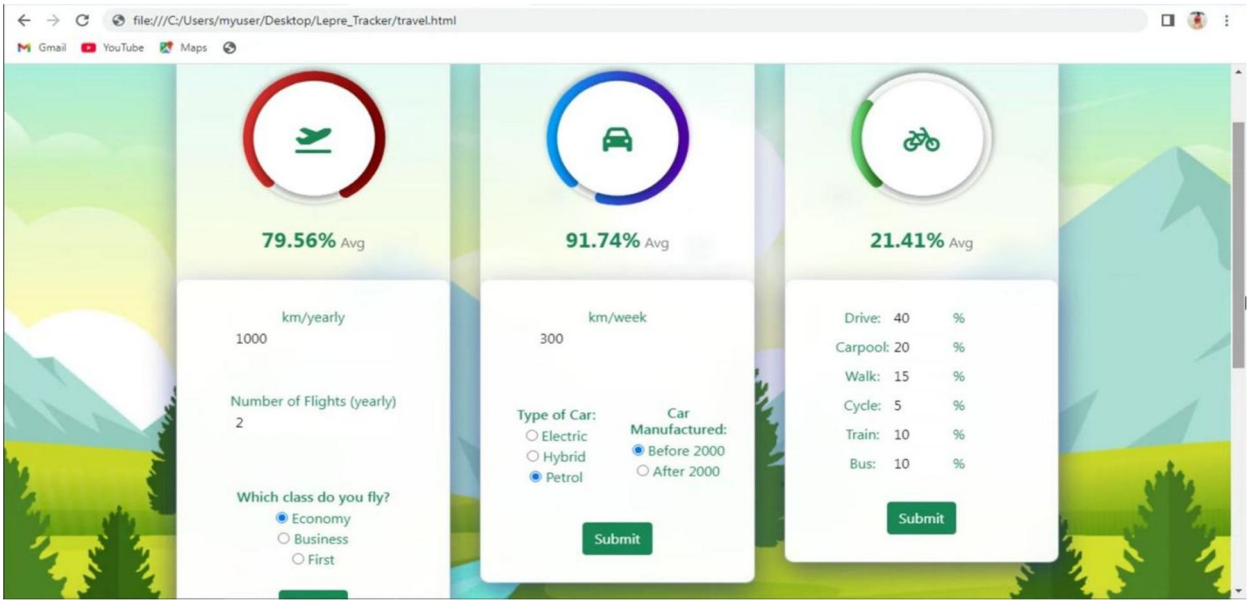
Let's calculate for Donation contribution table

DONATION RANGE(RUPEES)	POINTS
0-9	0%
10-19	5%
20-29	10%
30-39	15%
40-49	20%
50 and above	35%

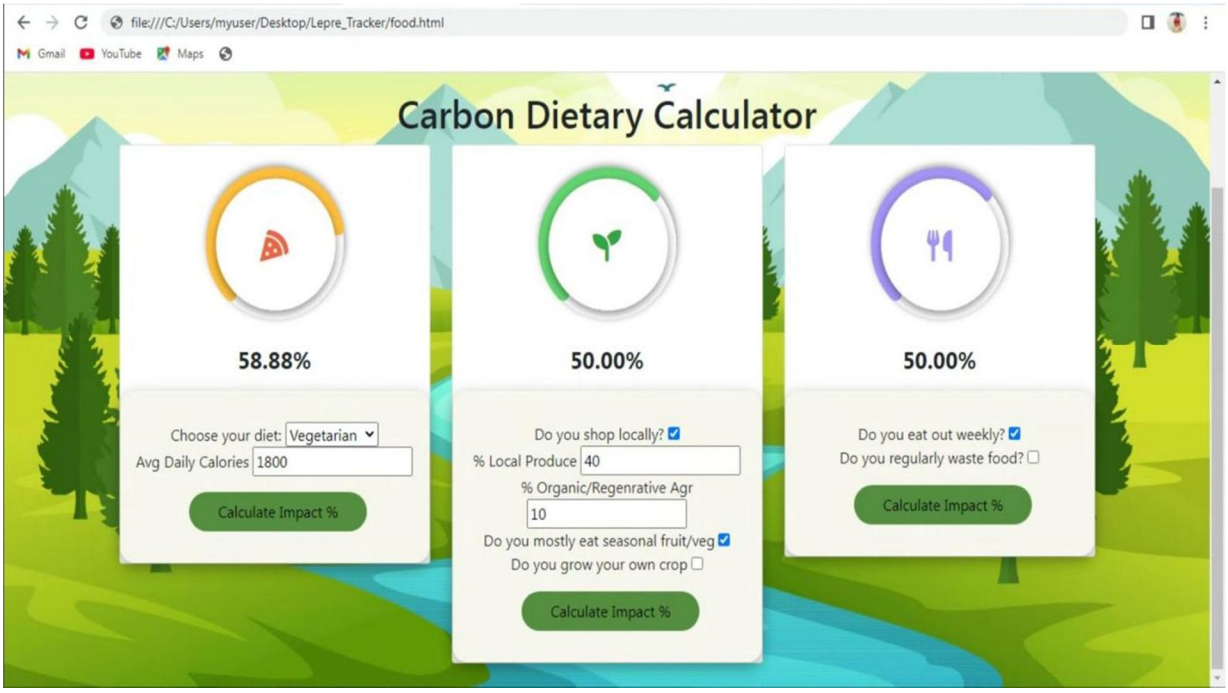
Total = 35%(Planting trees)+35%(Donation)
= 70%

IV. RESULTS

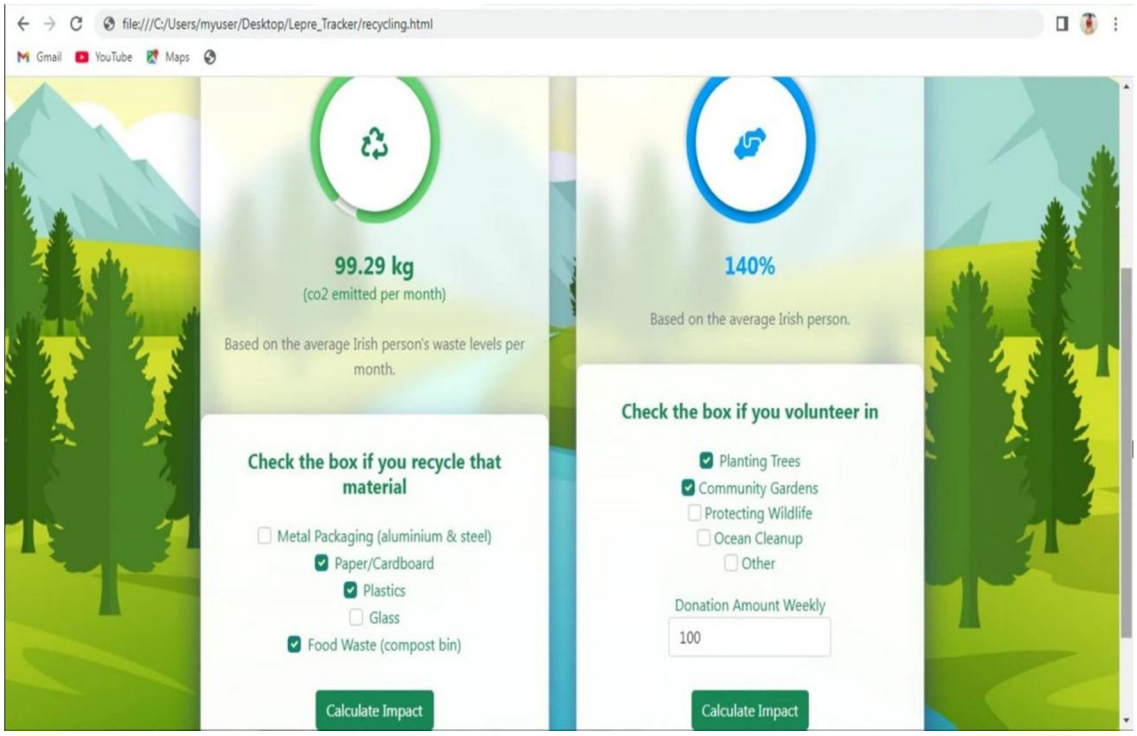
1) Travel – Transportation emissions come mainly from daily car usage and occasional air travel making it a major contribution to overall footprint.



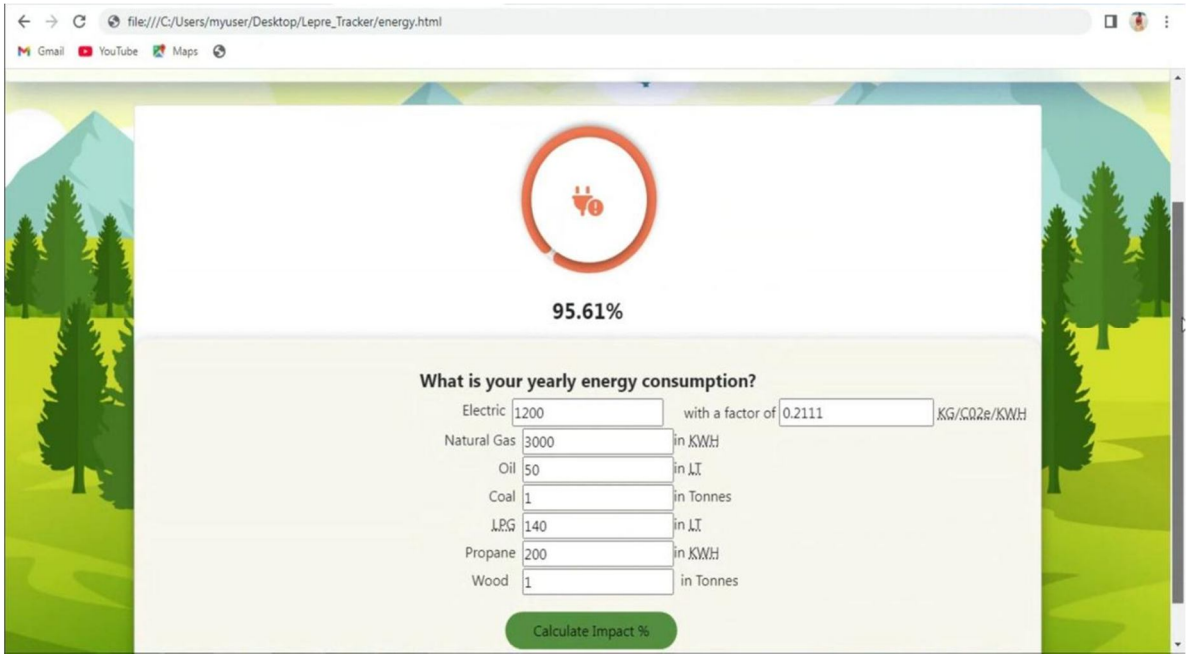
2) Food – Food is more significant to the carbon footprint due to combined effect of daily intake and meat , frequent consumption of processed foods and eating out.



3) Community – Waste had the least impact, though still relevant as household waste and limited recycling contributed to emissions.



4) Energy – The carbon footprint from energy use was the highest due to reliance on electricity and fossil fuels for household needs.



V. CONCLUSION

Lepre Tracker transforms sustainability from a vague concept into a personal, measurable journey. By seamlessly integrating the tracking of energy use, food habits and transportation choices and it empowers users to understand and reduce their carbon footprint with ease. The platform offers real-time insights and visual progress indicators that turn data into action. Unlike fragmented tools, Lepre Tracker provides a unified user-friendly platform that keeps individuals motivated. The design will give accurate carbon emission calculators, fosters daily eco-friendly decisions. Features like leadership board drive continuous engagement. This project highlights how innovative technology can influence conscious living and spark long-term behaviour change. With Lepre Tracker, sustainability is no longer a challenge - it becomes a lifestyle. Through every choice, users contribute to a greener and smarter planet.

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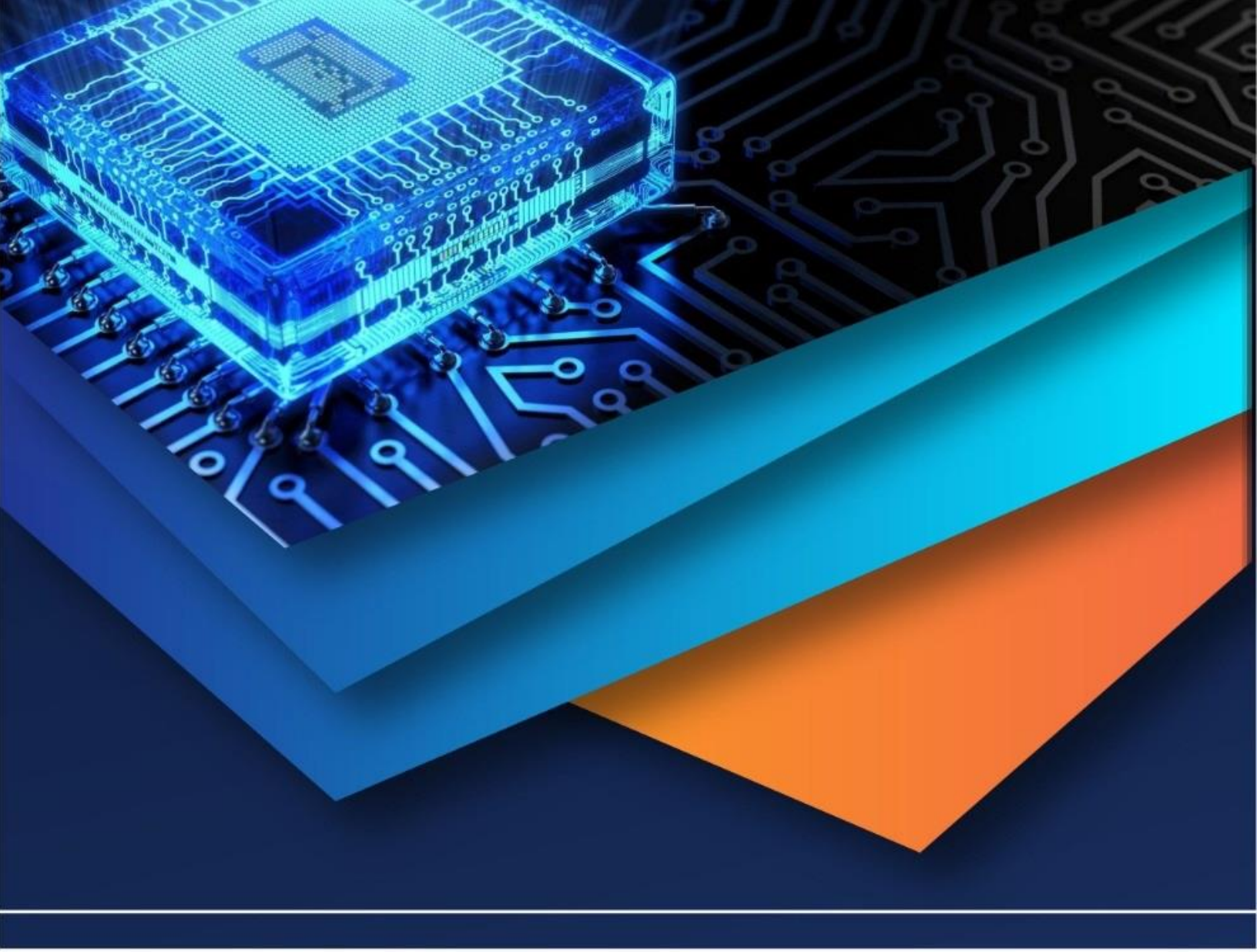

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