

VISUALIZATION TOOL FOR ELECTRIC VEHICLE CHARGE AND RANGE ANALYSIS



Project submitted to

Naan Mudhalvan
A Massive Upskilling Program

Mononmaniam Sundaranar University

in partial fulfilment of the requirements for the degree of

BACHELOR OF SCIENCE IN MATHEMATICS

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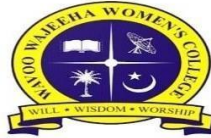
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1.1 OVERVIEW:

A vehicle that can be powered by an electric motor that draws electricity from a battery and is capable of being charged from an external source and have an electric motor instead of an internal combustion engine.

The Electric Vehicle is not new, but it has been receiving significantly more attention in recent years. Advances in both EV analytics and battery technologies have led to increased automotive market share. However, this growth is not attributed to hardware alone. The modern mechatronic vehicle marries electrical storage and propulsion systems with electronic sensors, integrated closely with software, secure, data transfer, controls and actuators and data analysis to form a comprehensive transportation solution.

1.2 PURPOSE:

2

EV charging data and predictive analytics are critical to making these projections. Projecting where to place new charging infrastructure requires a deep understanding of today's population and physical environs as well as the ability to predict future EV Charging - related trends.

*Existing EV charging infrastructure locations and types.

*Population density and movement.

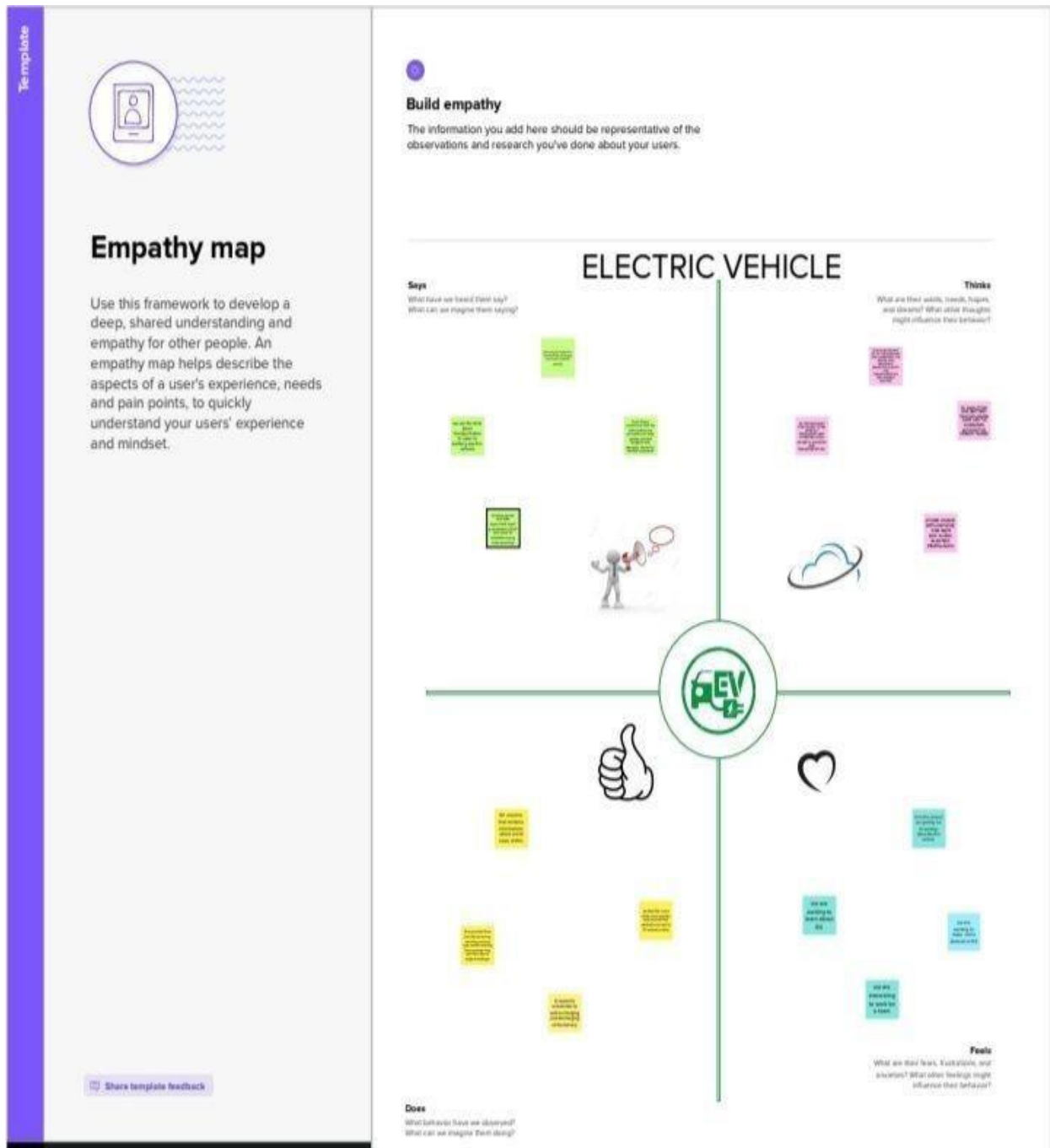
*Mobility data, such as commute frequency and distance, driving patterns.

*Transportation corridors.

2. Problem Definition & Design Thinking

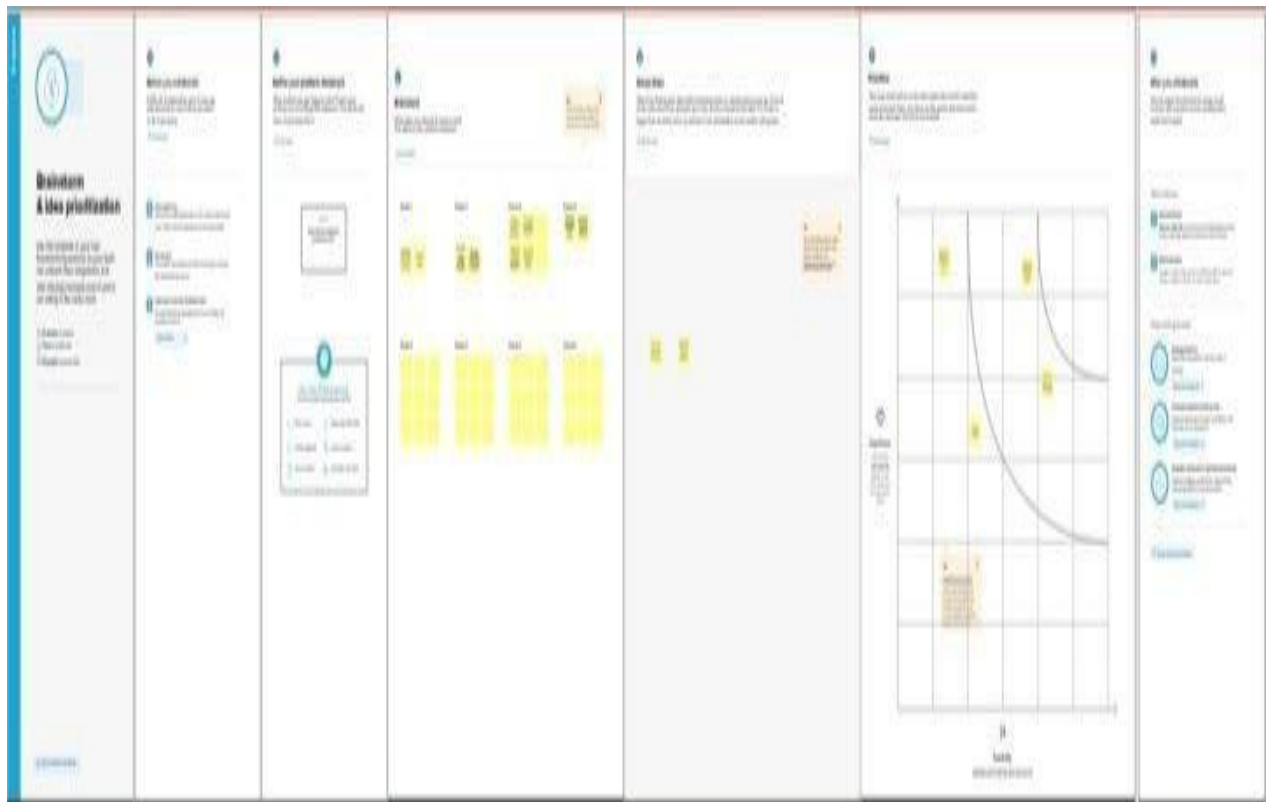
3

2.1 Empathy map:



2.2 Ideation & Brainstorming Map:

4



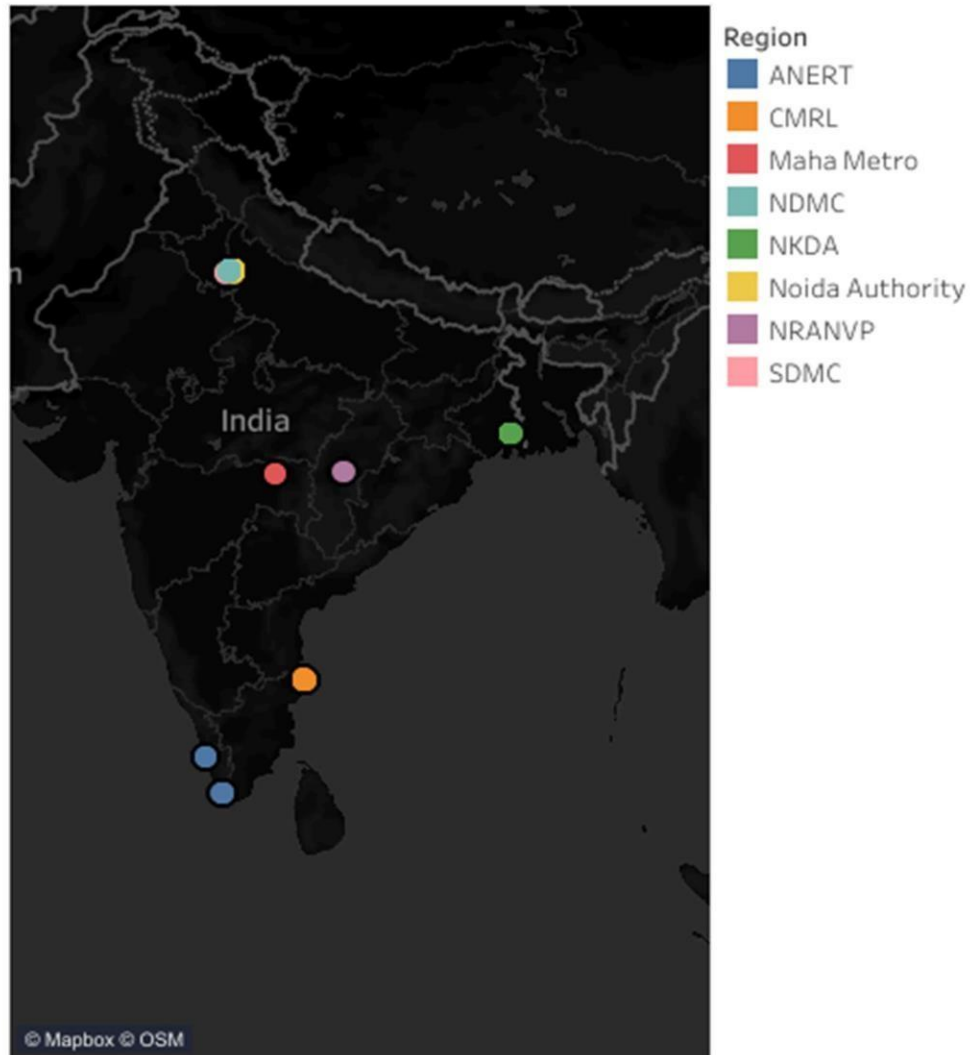
Story of Electric cars in India

Charging stations in
India

Charging stations by
region and tyoe

Price of Electric cars by
different brands

Differ
ent ..



4. ADVANTAGES & DISADVANTAGES

7

ADVANTAGES OF EV:

**Driving an electric car is significantly smooth.*

**Electric Vehicle run on renewable power, whereas conventional automobiles function on the combustion of fossil fuels, which reduces the world's fossil-fuel stocks.*

**Electricity is far less expensive than fuels such as gasoline and diesel, which are subject to regular price increases.*

**Governments throughout the world have granted tax breaks to encourage people to drive electric vehicles as a part of green program.*

**Electric cars have fewer moving components, wear and tear is reduced when compared to traditional auto part. Repairs are also simpler and less expensive than combustion engines.*

DISADVANTAGES OF EV:

**Electric vehicles continue to be quite expensive, and many buyers believe they are not as inexpensive as traditional automobiles.*

**People who need to travel long distances are concerned about finding adequate charging stations in the middle of their journey, which are not always accessible.*

**Unlike conventional automobiles, which require only a few minutes to replenish their gas tanks, charging an electric vehicle takes many hours.*

**Currently, there aren't many electric car models to pick from in terms of appearance, style or customized variations.*

**When compared to conventional automobiles, electric vehicles have a shorter driving range.*

- Electric vehicles use electricity to charge their batteries instead of using fossil fuels like petrol's 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.
- An electric vehicle is a vehicle that runs on electric energy powered by a motor. Since they do not emit exhaust gas, they are rapidly gaining popularity in recent years as eco- friendly vehicles.
- It is equipped with a high capacity lithium -ion battery pack and a high-power motor for driving. The output from the lithium-ion battery is DC current, but the drive motor of electric vehicles is an AC motor. Therefore, an inverter that converts the DC current into three -phase AC must also be installed.

6.CONCLUSION

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- **At a busy fuel station during peak hours, and you are getting late to reach your workplace. These problems can easily be overcome with an electric vehicle.**
- **Electric Vehicle takes a huge part of marketing in future World.**
- **This project is help to know about Electric vehicle.**
- **We are glad to announce that we might work full and fully of our team co-operation.**

7. FUTURE SCOPE

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- ❖ At a critical moment, as many nations are working to free mother earth from the clutches of carbon emissions and CO₂, India should take the lead by transitioning to EV mobility, making the country the greener and cleaner ecosystem.
- ❖ Through the concept of Electric Vehicle has been around for a long time, it has gotten a lot of attention in the recent decade due to the increasing carbon footprints and other environmental repercussion of fuel-based vehicles.
- ❖ Driving an Electric Vehicle can help you reduce your carbon footprint because there will be zero tailpipe emissions.
- ❖ You can reduce the environmental impact of charging your vehicle further by choosing renewable energy options for home electricity.

8.APPENDIX

11

Source link:

file:///C:/Users/ELCOT/Documents/Submission%20files/Asserts/Arsha/index.html

Source code:

```
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="utf-8">
  <meta content="width=device-width, initial-scale=1.0" name="viewport">

  <title>Electric cars analytics - Index</title>
  <meta content="" name="description">
  <meta content="" name="keywords">

  <!-- Favicons -->
  <link href="assets/img/favicon.png" rel="icon">
  <link href="assets/img/apple-touch-icon.png" rel="apple-touch-icon">

  <!-- Google Fonts -->
  <link
href="https://fonts.googleapis.com/css?family=Open+Sans:300,300i,400,400i,600,600
i,700,700i|Jost:300,300i,400,400i,500,500i,600,600i,700,700i|Poppins:300,300i,400
,400i,500,500i,600,600i,700,700i" rel="stylesheet">

  <!-- Vendor CSS Files -->
  <link href="assets/vendor/aos/aos.css" rel="stylesheet">
  <link href="assets/vendor/bootstrap/css/bootstrap.min.css" rel="stylesheet">
  <link href="assets/vendor/bootstrap-icons/bootstrap-icons.css"
rel="stylesheet">
  <link href="assets/vendor/boxicons/css/boxicons.min.css" rel="stylesheet">
  <link href="assets/vendor/glightbox/css/glightbox.min.css" rel="stylesheet">
  <link href="assets/vendor/remixicon/remixicon.css" rel="stylesheet">
  <link href="assets/vendor/swiper/swiper-bundle.min.css" rel="stylesheet">

  <!-- Template Main CSS File -->
```

```

<link href="assets/css/style.css" rel="stylesheet">

<!-- =====>
* Template Name: Arsha
* Updated: Mar 10 2023 with Bootstrap v5.2.3
* Template URL: https://bootstrapmade.com/arsha-free-bootstrap-html-template-corporate/
* Author: BootstrapMade.com
* License: https://bootstrapmade.com/license/
===== -->
</head>

<body>

<!-- ===== Header ===== -->
<header id="header" class="fixed-top ">
  <div class="container d-flex align-items-center">

    <h1 class="logo me-auto"><a href="index.html">E-CarStart</a></h1>
    <!-- Uncomment below if you prefer to use an image logo -->
    <!-- <a href="index.html" class="logo me-auto"></a>-->

    <nav id="navbar" class="navbar">
      <ul>
        <li><a class="nav-link scrollto active" href="#hero">Home</a></li>
        <li><a class="nav-link scrollto" href="#about">About</a></li>
        <li><a class="nav-link scrollto" href="#dashboard">Dashboard</a></li>
        <li><a class="nav-link scrollto" href="#story">Story</a></li>
        <li><a class="nav-link scrollto" href="#team">Team</a></li>

        <li><a class="nav-link scrollto" href="#contact">Contact</a></li>
        <li><a class="getstarted scrollto" href="#about">Get Started</a></li>
      </ul>
      <i class="bi bi-list mobile-nav-toggle"></i>
    </nav><!-- .navbar -->

  </div>
</header><!-- End Header -->

<!-- ===== Hero Section ===== -->
<section id="hero" class="d-flex align-items-center">

  <div class="container">
    <div class="row">

```

```

        <div class="col-lg-6 d-flex flex-column justify-content-center pt-4 pt-
lg-0 order-2 order-lg-1" data-aos="fade-up" data-aos-delay="200">
            <h1>We offer modern Analytics solutions for Electric Vehicles</h1>

            <div class="d-flex justify-content-center justify-content-lg-start">
                <a href="#about" class="btn-get-started scrollto">Get Started</a>

            </div>
        </div>
        <div class="col-lg-6 order-1 order-lg-2 hero-img" data-aos="zoom-in"
data-aos-delay="200">
            
        </div>
    </div>
</div>

</section><!-- End Hero -->

<main id="main">

    <!-- ===== Clients Section ===== -->
    <section id="clients" class="clients section-bg">
        <div class="container">

            <div class="row" data-aos="zoom-in">

                <div class="col-lg-2 col-md-4 col-6 d-flex align-items-center justify-
content-center">
                    
                </div>

                <div class="col-lg-2 col-md-4 col-6 d-flex align-items-center justify-
content-center">
                    
                </div>

                <div class="col-lg-2 col-md-4 col-6 d-flex align-items-center justify-
content-center">
                    
                </div>

                <div class="col-lg-2 col-md-4 col-6 d-flex align-items-center justify-
content-center">

```

```

        
    </div>

    <div class="col-lg-2 col-md-4 col-6 d-flex align-items-center justify-
content-center">
        
    </div>

    <div class="col-lg-2 col-md-4 col-6 d-flex align-items-center justify-
content-center">
        
    </div>

</div>

</div>
</section><!-- End Cliens Section -->

<!-- ===== About Us Section ===== -->
<section id="about" class="about">
    <div class="container" data-aos="fade-up">

        <div class="section-title">
            <h2>About Us</h2>
        </div>

        <div class="row content">
            <div class="col-lg-6">
                Electric cars are the future ...Electric cars aren't pollution-free
;they have to get their energy from somewhere
                </p>
                <ul>
                    <li><i class="ri-check-double-line"></i>The Electric Vehicles is
not new , but it has been receiving significantly more attention in recent
years</li>
                    <li><i class="ri-check-double-line"></i>A vehicle that can be
powered by an electric motor that draws electricity from a battery and is capable
of being charged from an external source and have an electric motor instead of an
internal combustion engine </li>
                    <li><i class="ri-check-double-line"></i>The new EV's are combined
Electrical storage and propulsion systems with electronic sensors, controls, and
actuators, integrated closely with software, secure data transfer to form a
comprehensive transportation solution. </li>
                </ul>
            </div>

```



```

        <div class="col-lg-6 pt-4 pt-lg-0">
            <p>

            </p>
            <a href="#" class="btn-learn-more">Learn More</a>
        </div>
    </div>

</div>
</section><!-- End About Us Section -->

<!-- ===== Skills Section ===== -->
<section id="skills" class="skills">
    <div class="container" data-aos="fade-up">

        <div class="row">
            <div class="col-lg-6 d-flex align-items-center" data-aos="fade-right"
data-aos-delay="100">
                
            </div>
            <div class="col-lg-6 pt-4 pt-lg-0 content" data-aos="fade-left" data-
aos-delay="100">
                <h3>Voluptatem dignissimos provident quasi corporis voluptates</h3>
                <p class="fst-italic">

                </p>

                <div class="skills-content">

                    <div class="progress">
                        <span class="skill">HTML <i class="val">100%</i></span>
                        <div class="progress-bar-wrap">
                            <div class="progress-bar" role="progressbar" aria-
valuenow="100" aria-valuemin="0" aria-valuemax="100"></div>
                        </div>
                    </div>

                    <div class="progress">
                        <span class="skill">CSS <i class="val">90%</i></span>
                        <div class="progress-bar-wrap">
                            <div class="progress-bar" role="progressbar" aria-valuenow="90"
aria-valuemin="0" aria-valuemax="100"></div>
                        </div>
                    </div>
                </div>
            </div>
        </div>
    </div>

```

```

        <div class="progress">
            <span class="skill">JavaScript <i class="val">75%</i></span>
            <div class="progress-bar-wrap">
                <div class="progress-bar" role="progressbar" aria-valuenow="75"
aria-valuemin="0" aria-valuemax="100"></div>
            </div>
        </div>

        <div class="progress">
            <span class="skill">Photoshop <i class="val">55%</i></span>
            <div class="progress-bar-wrap">
                <div class="progress-bar" role="progressbar" aria-valuenow="55"
aria-valuemin="0" aria-valuemax="100"></div>
            </div>
        </div>

    </div>

</div>
</div>

</div>
</section><!-- End Skills Section -->

<!-- ===== Services Section ===== -->
<section id="services" class="services section-bg">
    <div class="container" data-aos="fade-up">

        <div class="section-title">
            <h2>Services</h2>
            <p>Magnam dolores commodi suscipit. Necessitatibus eius consequatur ex
aliquid fuga eum quidem. Sit sint consectetur velit. Quisquam quos quisquam
cupiditate. Et nemo qui impedit suscipit alias ea. Quia fugiat sit in iste
officiis commodi quidem hic quas.</p>
        </div>

        <div class="row">
            <div class="col-xl-3 col-md-6 d-flex align-items-stretch" data-
aos="zoom-in" data-aos-delay="100">
                <div class="icon-box">
                    <div class="icon"><i class="bx bxl-dribbble"></i></div>
                    <h4><a href="">Lorem Ipsum</a></h4>
                    <p>Voluptatum deleniti atque corrupti quos dolores et quas
molestias excepturi</p>
                </div>

```

```

    </div>

    <div class="col-xl-3 col-md-6 d-flex align-items-stretch mt-4 mt-md-0"
data-aos="zoom-in" data-aos-delay="200">
      <div class="icon-box">
        <div class="icon"><i class="bx bx-file"></i></div>
        <h4><a href="">Sed ut perspici</a></h4>
        <p>Duis aute irure dolor in reprehenderit in voluptate velit esse
cillum dolore</p>
      </div>
    </div>

    <div class="col-xl-3 col-md-6 d-flex align-items-stretch mt-4 mt-xl-0"
data-aos="zoom-in" data-aos-delay="300">
      <div class="icon-box">
        <div class="icon"><i class="bx bx-tachometer"></i></div>
        <h4><a href="">Magni Dolores</a></h4>
        <p>Excepteur sint occaecat cupidatat non proident, sunt in culpa
qui officia</p>
      </div>
    </div>

    <div class="col-xl-3 col-md-6 d-flex align-items-stretch mt-4 mt-xl-0"
data-aos="zoom-in" data-aos-delay="400">
      <div class="icon-box">
        <div class="icon"><i class="bx bx-layer"></i></div>
        <h4><a href="">Nemo Enim</a></h4>
        <p>At vero eos et accusamus et iusto odio dignissimos ducimus qui
blanditiis</p>
      </div>
    </div>

  </div>

</div>
</section><!-- End Services Section -->

<!-- ===== Story Section ===== -->
<section id="story" class="story">
  <div class="story" data-aos="zoom-in">

    <div class="row">
      <div class="col-lg-9 text-center text-lg-start">
        <h3>Story</h3>

```

```

        <p> <div class='tableauPlaceholder' id='viz1680880720997'
style='position: relative'><noscript><a href='#'><img alt='Story of Electric cars
in India '
src='https://public.tableau.com/static/images/El/Electric
carsanalytics__StoryofElectriccarsinIndia/1_rss.png' style='border:
none' /></a></noscript><object class='tableauViz' style='display:none;'><param
name='host_url' value='https%3A%2F%2Fpublic.tableau.com%2F' /> <param
name='embed_code_version' value='3' /> <param name='site_root' value='' /><param
name='name' value='Electriccarsanalytics__StoryofElectriccarsinIndia'
/><param name='tabs' value='no' /><param name='toolbar' value='yes' /><param
name='static_image'
value='https://public.tableau.com/static/images/El/Electr
iccarsanalytics__StoryofElectriccarsinIndia/1.png' /> <param
name='animate_transition' value='yes' /><param name='display_static_image'
value='yes' /><param name='display_spinner' value='yes' /><param
name='display_overlay' value='yes' /><param name='display_count' value='yes'
/><param name='language' value='en-US' /><param name='filter' value='publish=yes'
/></object></div>
        <script
type='text/javascript'>
            var divElement =
document.getElementById('viz1680880720997');
            var vizElement =
divElement.getElementsByTagName('object')[0];
            vizElement.style
            .width='516px';vizElement.style.height='691px';
            var
scriptElement =
document.createElement('script');
            scriptElement.src =
'https://public.tableau.com/javascripts/api/viz_v1.js';
            vizEle
ment.parentNode.insertBefore(scriptElement,
vizElement);
        </script></p>
    </div>
    <div class="col-lg-3 story-btn-container text-center">
        <a class="story-btn align-middle" href="#">Story</a>
    </div>
</div>
</section><!-- End Story Section -->

<!-- ===== Dashboard Section ===== -->
<section id="dashboard" class="dashboard">
    <div class="container" data-aos="fade-up">

        <div class="section-title">
            <h2>Dashboard</h2>
            <p><div class='tableauPlaceholder' id='viz1680859893733'
style='position: relative'><noscript><a href='#'><img alt='Dashboard 1 '
src='https://public.tableau.com/static/images/El/Electric

```

```
carsanalytics_&#47;Dashboard1&#47;1_rss.png' style='border: none'
/></a></noscript><object class='tableauViz' style='display:none;'><param
name='host_url' value='https%3A%2F%2Fpublic.tableau.com%2F' /> <param
name='embed_code_version' value='3' /> <param name='site_root' value='' /><param
name='name' value='Electriccarsanalytics_&#47;Dashboard1' /><param name='tabs'
value='no' /><param name='toolbar' value='yes' /><param name='static_image'
value='https:&#47;&#47;public.tableau.com&#47;static&#47;images&#47;El&#47;Electr
iccarsanalytics_&#47;Dashboard1&#47;1.png' /> <param name='animate_transition'
value='yes' /><param name='display_static_image' value='yes' /><param
name='display_spinner' value='yes' /><param name='display_overlay' value='yes'
/><param name='display_count' value='yes' /><param name='language' value='en-US'
/><param name='filter' value='publish=yes'
/></object></div>
<script
type='text/javascript'>
var divElement =
document.getElementById('viz1680859893733');
var vizElement =
divElement.getElementsByTagName('object')[0];
if (
divElement.offsetWidth > 800 ) {
vizElement.style.minWidth='1320px';vizElement.style.maxWidth='1420px';vizElement.
style.width='100%';vizElement.style.minHeight='2027px';vizElement.style.maxHeight
='2127px';vizElement.style.height=(divElement.offsetWidth*0.75)+'px';} else if (
divElement.offsetWidth > 500 ) {
vizElement.style.minWidth='1320px';vizElement.style.maxWidth='1420px';vizElement.
style.width='100%';vizElement.style.minHeight='2027px';vizElement.style.maxHeight
='2127px';vizElement.style.height=(divElement.offsetWidth*0.75)+'px';} else {
vizElement.style.width='100%';vizElement.style.height='2327px';}
var scriptElement =
document.createElement('script');
scriptElement.src =
'https://public.tableau.com/javascripts/api/viz_v1.js';
vizEle
ment.parentNode.insertBefore(scriptElement,
vizElement);
</script></p>
</div>

</div>

</div>
</section>
<!-- End Dashboard Section -->
<!-- ===== Contact Section ===== -->
<section id="contact" class="contact">
<div class="container" data-aos="fade-up">

<div class="section-title">
<h2>Contact</h2>

```

```
<p>Magnam dolores commodi suscipit. Necessitatibus eius consequatur ex  
aliquid fuga eum quidem. Sit sint consectetur velit. Quisquam quos quisquam  
cupiditate. Et nemo qui impedit suscipit alias ea. Quia fugiat sit in iste  
officiis commodi quidem hic quas.</p>
```

```
</div>
```

```
<div class="row">
```

```
<div class="col-lg-5 d-flex align-items-stretch">
```

```
<div class="info">
```

```
<div class="address">
```

```
<i class="bi bi-geo-alt"></i>
```

```
<h4>Location:</h4>
```

```
<p>Wavoo Wajeeha College , Kayalpatnam ,Thoothukudi,  
Tamilnadu</p>
```

```
</div>
```

```
<div class="email">
```

```
<i class="bi bi-envelope"></i>
```

```
<h4>Email:</h4>
```

```
<p>v.fathimaserin@wavoowajeehacollege.in</p>
```

```
</div>
```

```
<div class="phone">
```

```
<i class="bi bi-phone"></i>
```

```
<h4>Call:</h4>
```

```
<p>+1 5589 55488 55s</p>
```

```
</div>
```

```
<iframe
```

```
src="https://www.google.com/maps/embed?pb=!1m14!1m8!1m3!1d12097.433213460943!2d-  
74.0062269!3d40.7101282!3m2!1i1024!2i768!4f13.1!3m3!1m2!1s0x0%3A0xb89d1fe6bc49944  
3!2sDowntown+Conference+Center!5e0!3m2!1smk!2sbg!4v1539943755621" frameborder="0"  
style="border:0; width: 100%; height: 290px;" allowfullscreen></iframe>
```

```
</div>
```

```
</div>
```

```
<div class="col-lg-7 mt-5 mt-lg-0 d-flex align-items-stretch">
```

```
<form action="forms/contact.php" method="post" role="form"  
class="php-email-form">
```

```
<div class="row">
```

```
<div class="form-group col-md-6">
```

```
<label for="name">Your Name</label>
```

```

        <input type="text" name="name" class="form-control" id="name"
required>
    </div>
    <div class="form-group col-md-6">
        <label for="name">Your Email</label>
        <input type="email" class="form-control" name="email"
id="email" required>
    </div>
</div>
<div class="form-group">
    <label for="name">Subject</label>
    <input type="text" class="form-control" name="subject"
id="subject" required>
</div>
<div class="form-group">
    <label for="name">Message</label>
    <textarea class="form-control" name="message" rows="10"
required></textarea>
</div>
<div class="my-3">
    <div class="loading">Loading</div>
    <div class="error-message"></div>
    <div class="sent-message">Your message has been sent. Thank
you!</div>
</div>
<div class="text-center"><button type="submit">Send
Message</button></div>
</form>
</div>

</div>

</section><!-- End Contact Section -->

</main><!-- End #main -->

<!-- ===== Footer ===== -->
<footer id="footer">

    <div class="footer-newsletter">
        <div class="container">
            <div class="row justify-content-center">
                <div class="col-lg-6">
                    <h4>Join Our Newsletter</h4>

```

```

        <p>Tamen quem nulla quae legam multos aute sint culpa legam noster
magna</p>
        <form action="" method="post">
            <input type="email" name="email"><input type="submit"
value="Subscribe">
        </form>
    </div>
</div>
</div>
</div>

<div class="footer-top">
    <div class="container">
        <div class="row">

            <div class="col-lg-3 col-md-6 footer-contact">
                <h3>Arsha</h3>
                <p>
                    A108 Adam Street <br>
                    New York, NY 535022<br>
                    United States <br><br>
                    <strong>Phone:</strong> +1 5589 55488 55<br>
                    <strong>Email:</strong> info@example.com<br>
                </p>
            </div>

            <div class="col-lg-3 col-md-6 footer-links">
                <h4>Useful Links</h4>
                <ul>
                    <li><i class="bx bx-chevron-right"></i> <a href="#">Home</a></li>
                    <li><i class="bx bx-chevron-right"></i> <a href="#">About
us</a></li>
                    <li><i class="bx bx-chevron-right"></i> <a
href="#">Services</a></li>
                    <li><i class="bx bx-chevron-right"></i> <a href="#">Terms of
service</a></li>
                    <li><i class="bx bx-chevron-right"></i> <a href="#">Privacy
policy</a></li>
                </ul>
            </div>

            <div class="col-lg-3 col-md-6 footer-links">
                <h4>Our Services</h4>
                <ul>

```



```

        <li><i class="bx bx-chevron-right"></i> <a href="#">Web
Design</a></li>
        <li><i class="bx bx-chevron-right"></i> <a href="#">Web
Development</a></li>
        <li><i class="bx bx-chevron-right"></i> <a href="#">Product
Management</a></li>
        <li><i class="bx bx-chevron-right"></i> <a
href="#">Marketing</a></li>
        <li><i class="bx bx-chevron-right"></i> <a href="#">Graphic
Design</a></li>
    </ul>
</div>

<div class="col-lg-3 col-md-6 footer-links">
    <h4>Our Social Networks</h4>
    <p>Cras fermentum odio eu feugiat lide par naso tierra videa magna
derita valies</p>
    <div class="social-links mt-3">
        <a href="#" class="twitter"><i class="bx bxl-twitter"></i></a>
        <a href="#" class="facebook"><i class="bx bxl-facebook"></i></a>
        <a href="#" class="instagram"><i class="bx bxl-instagram"></i></a>
        <a href="#" class="google-plus"><i class="bx bxl-skype"></i></a>
        <a href="#" class="linkedin"><i class="bx bxl-linkedin"></i></a>
    </div>
</div>

</div>
</div>
</div>

<div class="container footer-bottom clearfix">
    <div class="copyright">
        &copy; Copyright <strong><span>Arsha</span></strong>. All Rights Reserved
    </div>
    <div class="credits">
        <!-- All the links in the footer should remain intact. -->
        <!-- You can delete the links only if you purchased the pro version. -->
        <!-- Licensing information: https://bootstrapmade.com/license/ -->
        <!-- Purchase the pro version with working PHP/AJAX contact form:
https://bootstrapmade.com/arsha-free-bootstrap-html-template-corporate/ -->
        Designed by <a href="https://bootstrapmade.com/">BootstrapMade</a>
    </div>
</div>
</footer><!-- End Footer -->

```

```
<div id="preloader"></div>
<a href="#" class="back-to-top d-flex align-items-center justify-content-
center"><i class="bi bi-arrow-up-short"></i></a>

<!-- Vendor JS Files -->
<script src="assets/vendor/aos/aos.js"></script>
<script src="assets/vendor/bootstrap/js/bootstrap.bundle.min.js"></script>
<script src="assets/vendor/glightbox/js/glightbox.min.js"></script>
<script src="assets/vendor/isotope-layout/isotope.pkgd.min.js"></script>
<script src="assets/vendor/swiper/swiper-bundle.min.js"></script>
<script src="assets/vendor/waypoints/noframework.waypoints.js"></script>
<script src="assets/vendor/php-email-form/validate.js"></script>

<!-- Template Main JS File -->
<script src="assets/js/main.js"></script>

</body>

</html>
```