static/Home.css:

```
@import url(https://fonts.googleapis.com/css?family=Cookie|Raleway:300,700,400);
*{
 box-sizing: border-box;
 font-size: 1em;
 margin: 0;
 padding: 0;
}
body{
 background: url('https://ak.picdn.net/shutterstock/videos/1098595/thumb/1.jpg') center
repeat;
 background-size: cover;
 color: #333;
 font-size: 18px;
 font-family: 'Raleway', sans-serif;
}
#parent
{
   text-align: center;
   width:100%;
}
.container{
 border-radius: 0.5em;
 box-shadow: 0 0 1em 0 rgba(51,51,51,0.25);
 display: block;
 max-width: 700px;
 overflow: hidden;
   background-color:#fff;
   opacity: 0.75;
 padding: 2em;
 width: 98%;
}
.heading{
   background-color: rgb(
       133, 130, 126
       );
   height: 900px;
}
.heading1{
```

```
   background-color:rgb(153, 106, 106);
   height: 350px;
}
form input.submit{
 background: rgba(255,255,255,0.25);
 border: 1px solid #333;
 line-height: 1em;
 padding: 0.5em 0.5em;
 -webkit-transition: all 0.25s;
 transition: all 0.25s;
}
form input.submit:hover,
form input.submit:focus,
form input.submit:active,
form input.submit.loading{
 background: #333;
 color: #fff;
 outline: none;
}
form button.success{
 background: #27ae60;
 border-color: #27ae60;
 color: #fff;
}
@-webkit-keyframes spin{
 from{ transform: rotate(0deg); }
 to{ transform: rotate(360deg); }
}
@keyframes spin{
 from{ transform: rotate(0deg); }
 to{ transform: rotate(360deg); }
}
form button span.loading-spinner{
 -webkit-animation: spin 0.5s linear infinite;
 animation: spin 0.5s linear infinite;
 border: 2px solid #fff;
 border-top-color: transparent;
 border-radius: 50%;
 display: inline-block;
 height: 1em;
```

```
 width: 1em;
}
form label{
 border-bottom: 1px solid #333;
 display: block;
 font-size: 1.25em;
 margin-bottom: 0.5em;
 -webkit-transition: all 0.25s;
 transition: all 0.25s;
}
form label.col-one-half{
 font-size: 2em;
 float: left;
 width: 50%;
   font-family: 'Trebuchet MS';
}
form label.col-one-half:nth-of-type(even){
 border-left: 1px solid #333;
 padding-left: 0.25em;
}
form label.col-one-half1{
 font-size: 2em;
 float: left;
 width: 50%;
   font-family: 'Trebuchet MS';
}
form label.col-one-half1:nth-of-type(odd){
 border-left: 1px solid #333;
 padding-left: 0.25em;
}
form label input{
 background: none;
 border: none;
 font-size: x-large;
 line-height: 1em;
 font-weight: 300;
 padding: 0.125em 0.25em;
 width: 100%;
}
form label input:focus{
```

```
 outline: none;
}
form label input:-webkit-autofill{
 background-color: transparent !important;
}
form label span.label-text{
 display: block;
 font-size: 0.5em;
 font-weight: bold;
 padding-left: 0.5em;
 text-transform: uppercase;
 -webkit-transition: all 0.25s;
 transition: all 0.25s;
}
form label.checkbox{
 border-bottom: 0;
 text-align: center;
}
form label.checkbox input{
 display: none;
}
form label.checkbox span{
 font-size: 0.5em;
}
form label.checkbox span:before{
 content: '\e157';
 display: inline-block;
 font-family: 'Glyphicons Halflings';
 font-size: 1.125em;
 padding-right: 0.25em;
 position: relative;
   top: 1px;
}
form label.checkbox input:checked + span:before{content: '\e067';}
form label.invalid{border-color: #c0392b !important;}
form label.invalid span.label-text{color: #c0392b;}
form label.password{position: relative;}
form label.password button.toggle-visibility{
 background: none;
 border: none;
```

```
 cursor: pointer;
 font-size: 0.75em;
 line-height: 1em;
 position: absolute;
   top: 50%;
   right: 0.5em;
 text-align: center;
 -webkit-transform: translateY(-50%);
 -ms-transform: translateY(-50%);
 transform: translateY(-50%);
 -webkit-transition: all 0.25s;
 transition: all 0.25s;
}
form label.password button.toggle-visibility:hover,
form label.password button.toggle-visibility:focus,
form label.password button.toggle-visibility:active{
 color: #000;
 outline: none;
}
form label.password button.toggle-visibility span{vertical-align: middle;}
h1{
 font-size: 2em;
 margin: 0 0 0.5em 0;
 text-align: center;
 font-family: 'Cookie', cursive;
}
h1 img{
 height: auto;
 margin: 0 auto;
 max-width: 240px;
 width: 100%;
}
html{
 font-size: 18px;
 height: 100%;
}
.texte
{
   font-size: 3em;
 font-family: 'Trebuchet MS', cursive;
```

```
   color: #fff;
   position: relative;
       top:20%;
       right: 25%;
}
.texte1
{
   font-size: 1.5em;
 font-family: 'Trebuchet MS', cursive;
   color: #000;
   position: relative;
       top:4%;
       right:36.8%;
   font-weight: bold;
}
.texte2
{
   font-size: large;
 font-family: 'Trebuchet MS', cursive;
   color: #fff;
   position: relative;
       top: 8%;
       left: 4%;
   text-align: left;
   line-height: 1.6;
   width: 90%;
}
.texte3
{
   font-size: 1.5em;
 font-family: 'Trebuchet MS', cursive;
   color: #000;
   position: relative;
       top:4%;
       right:35.4%;
   font-weight: bold;
}
.texte4
{
   font-size: 1.5em;
```

```
 font-family: 'Trebuchet MS', cursive;
   color: #000;
   position: relative;
      top:4%;
      right:34.5%;
   font-weight: bold;
}
.texte5
{
   font-size: 1.4em;
 font-family: 'Trebuchet MS', cursive;
   color: #000;
   position: relative;
      top:4%;
      right:38%;
   font-weight: bold;
}
.texte6
{
   font-size: 1.5em;
 font-family: 'Trebuchet MS', cursive;
   color: #000;
   position: relative;
      top:4%;
      right:33.5%;
   font-weight: bold;
}
.texte7
{
   font-size: 1.5em;
 font-family: 'Trebuchet MS', cursive;
   color: #000;
   position: relative;
      top:6%;
      right:27%;
   font-weight: bold;
}
.texte8
{
 font-size: 1.5em;
```

```
 font-family: 'Trebuchet MS', cursive;
   color: #000;
   position: center;
   font-weight: bold;
}
.texte9
{
   font-size: large;
 font-family: 'Trebuchet MS', cursive;
   color: #fff;
   position: relative;
      top: 8%;
   text-align: left;
   line-height: 1.6;
   width: 90%;
}
.texte10
{
   font-size: large;
 font-family: 'Trebuchet MS', cursive;
   color: #fff;
   position: relative;
      top: 4%;
      left: 7%;
   text-align: left;
   line-height: 1.6;
   width: 90%;
}
.text-center{
 text-align: center;
}
.text-left{
 text-align: left;
   font-size: 2em;
   font-family: 'Cookie', cursive;
}
.header1 {
   overflow: hidden;
   background-color:grey;
   padding: 20px 10px;
```

```
}
 .header1 a {
  float: left;
  color: white;
  text-align: center;
  padding: 12px;
  text-decoration: none;
  font-size: 18px;
  line-height: 25px;
  border-radius: 4px;
}
 .header1 a.logo {
  font-size: 25px;
  font-weight: bold;
}
 .header1 a:hover {
  color: black;
}
 .header1 a.active {
  background-color: dodgerblue;
  color: white;
}
 .header1-right {
  float: right;
}
 @media screen and (max-width: 500px) {
  .header1 a {
    float: none;
    display: block;
    text-align: left;
  }

  .header1-right {
    float: none;
  }
}
#parent
{
    text-align: center;
    width:100%;
```

```
 }
 .carousel-item {
   height: 65vh;
   min-height: 350px;
   background: no-repeat center center scroll;
   -webkit-background-size: cover;
   -moz-background-size: cover;
   -o-background-size: cover;
   background-size: cover;
 }
 .site-footer
{
 background-color:#26272b;
 padding:45px 0 20px;
 font-size:15px;
 line-height:24px;
 color:#737373;
}
.site-footer hr
{
 border-top-color:#bbb;
 opacity:0.5
}
.site-footer hr.small
{
 margin:20px 0
}
.site-footer h6
{
 color:#fff;
 font-size:16px;
 text-transform:uppercase;
 margin-top:5px;
 letter-spacing:2px
}
.site-footer a
{
 color:#737373;
}
.site-footer a:hover
```

```
{
 color:#3366cc;
 text-decoration:none;
}
.footer-links
{
 padding-left:0;
 list-style:none
}
.footer-links li
{
 display:block
}
.footer-links a
{
 color:#737373
}
.footer-links a:active,.footer-links a:focus,.footer-links a:hover
{
 color:#3366cc;
 text-decoration:none;
}
.footer-links.inline li
{
 display:inline-block
}
.site-footer .social-icons
{
 text-align:right
}
.site-footer .social-icons a
{
 width:40px;
 height:40px;
 line-height:40px;
 margin-left:6px;
 margin-right:0;
 border-radius:100%;
 background-color:#33353d
}
```

```
.copyright-text
{
 margin:0
}
@media (max-width:991px)
{
 .site-footer [class^=col-]
 {
   margin-bottom:30px
 }
}
@media (max-width:767px)
{
 .site-footer
 {
   padding-bottom:0
 }
 .site-footer .copyright-text,.site-footer .social-icons
 {
   text-align:center
 }
}
.social-icons
{
 padding-left:0;
 margin-bottom:0;
 list-style:none
}
.social-icons li
{
 display:inline-block;
 margin-bottom:4px
}
.social-icons li.title
{
 margin-right:15px;
 text-transform:uppercase;
 color:#96a2b2;
 font-weight:700;
 font-size:13px
```

```
}
.social-icons a{
 background-color:#eceeef;
 color:#818a91;
 font-size:16px;
 display:inline-block;
 line-height:44px;
 width:44px;
 height:44px;
 text-align:center;
 margin-right:8px;
 border-radius:100%;
 -webkit-transition:all .2s linear;
 -o-transition:all .2s linear;
 transition:all .2s linear
}
.social-icons a:active,.social-icons a:focus,.social-icons a:hover
{
 color:#fff;
 background-color:#29aafe
}
.social-icons.size-sm a
{
 line-height:34px;
 height:34px;
 width:34px;
 font-size:14px
}
.social-icons a.facebook:hover
{
 background-color:#3b5998
}
.social-icons a.twitter:hover
{
 background-color:#00aced
}
.social-icons a.linkedin:hover
{
 background-color:#007bb6
}
```

```
@media (max-width:767px)
{
 .social-icons li.title
 {
   display:block;
   margin-right:0;
   font-weight:600
 }
}
.container2{
 padding-right:15px;
   padding-left:15px;
   margin-right:auto;
   margin-left:auto;
}
ul.abc
{
 list-style-type: square;
 position: relative;
   left: 5%;
}
```

templates/home.html:

```
<html>
  <head>
     <meta charset="UTF-8">
     <title>Fetala Distress Classification</title>
     <meta name="viewport" content="width=device-width, initial-scale=1">
     <link rel='stylesheet'
href='https://maxcdn.bootstrapcdn.com/bootstrap/3.3.5/css/bootstrap.min.css'>
     <link rel="stylesheet" href="/static/home.css">
     <link rel="stylesheet"
href="https://cdnjs.cloudflare.com/ajax/libs/meyer-reset/2.0/reset.min.css">
     <script
src="https://cdnjs.cloudflare.com/ajax/libs/prefixfree/1.0.7/prefixfree.min.js"></script>
  </head>
  <body>
     <div id=parent>
```

```
<div>
    <div class="header1">
      <a href="#default" class="logo" style="font-family: 'Trebuchet MS';
font-size:xx-large;">Fetal Distress Classification Using Cardiotocography</a>
      <div class="header1-right">
        <a href="https://gamecontent391.000webhostapp.com/Quote/stg.pdf"
target="_blank" style="font-family: 'Lucida Sans', 'Lucida Sans Regular', 'Lucida
Grande', 'Lucida Sans Unicode', Geneva, Verdana, sans-serif;">More Info</a>
      </div>
    </div>
    <div class="heading">
        <h2 class="texte1">What is Fetal Distress?</h2></br>
        <p class="texte10">Fetal distress refers to signs before and during
childbirth indicating that the fetus is not well. It typically occurs when the fetus has not
been receiving enough oxygen and when the pregnancy lasts too long.
        </p></br>
        <h2 class="texte3">What is Cardiotocography?</h2></br>
        <p class="texte10">Cardiotocography (CTG) is a technical means of
recording the fetal heartbeat and the uterine contractions during pregnancy. The
machine used to perform the monitoring is called a cardiotocograph, more commonly
known as an electronic fetal monitor (EFM).
        </p></br>
        <h2 class="texte4">What are inputs to be given?</h2></br>
        <p class="texte10">The outputs which are coming from
Cardiotocography Machine of one Person.Those Outputs should be the inputs for this
Software and they should be in integer or decimal format.
        </p><br>
        <h2 class="texte5">How Does this Work?</h2></br>
        <p class="texte10">This is computer-based approach for analyses the
results and observations made during the cardiotocography and predicts the
possibilities of the fetal distress to be occurred. This Software is designed using
adaptive boosting ensemble learning Algorithms and various other machine learning
algorithms which predicts the status of Distress
        </p><br>
        <h2 class="texte6">Different types of Fetal Distress</h2></br>
        <dl class="texte10" style="color:blanchedalmond">
            <dt>-Normal</dt>
            <dt>-Suspecious</dt>
            <dt>-Pathological</dt>
        </dl><br>
```

```
                <h2 class="texte6">Different Acronym & Expansion</h2></br>
                <dl class="texte10" style="color:blanchedalmond">
                    <dt>ASTV : Abnormal Short Term Variability</dt>
                    <dt>MSTV: Mean Value of Short Term Variability</dt>
                    <dt>ALTV : Abnormal Long Term Variability</dt>
                    <dt>MLTV: Mean Value of Long Term Variability</dt>
                </dl><br>
                <p class="texte10">The Form in below which is used to give inputs and
get fetal distress as Output
                </p><br>
            </div >
        </div>
    </br>
        <div>
            <div class="container">
                <header>
                    <h1>
                        <a href="#">
                            <img src="/static/2.png" alt="Authentic Collection">
                        </a>
                    </h1>
                </header></br>
                <form class="registration-form" action="{{ url_for('predict')}}"
method="POST">
                    <h1 class="text-left">Basic Inputs</h1></br></br>
                    <label class="col-one-half">
                        <span class="label-text">BaseLine Value</span><br>
                        <input type="text" name="baseline_value" required>
                    </label>
                    <label class="col-one-half">
                        <span class="label-text">Accelerations</span><br>
                        <input type="text" name="accelerations" required>
                    </label>
                    <label class="col-one-half">
                        <span class="label-text">Fetal Movement</span><br>
                        <input type="text" name="fetal_movement" required>
                    </label>
                    <label class="col-one-half">
                        <span class="label-text">Uterine Contractions</span><br>
                        <input type="text" name="uterine_contractions" required>
```

```
                </label></br>
                <h1 class="text-left">Decelerations Inputs</h1></br></br>
                <label class="col-one-half">
                    <span class="label-text">Light Decelerations</span><br>
                    <input type="text" name="light_decelerations" required>
                </label>
                <label class="col-one-half">
                    <span class="label-text">Severe_Decelerations</span><br>
                    <input type="text" name="severe_decelerations" required>
                </label>
                <label >
                    <span class="label-text" style="font-family: 'Trebuchet MS'; font-size:
0.8em;">Prolongued Decelerations</span><br>
                    <input type="text" name="prolongued_decelerations" required>
                </label></br>


                <h1 class="text-left">Variability Inputs</h1></br></br>
                <label class="col-one-half1">
                    <span class="label-text">ASTV</span><br>
                    <input type="text" name="ASTV" required>
                </label>
                <label class="col-one-half1">
                    <span class="label-text">MSTV</span><br>
                    <input type="text" name="MSTV" required>
                </label>
                <label class="col-one-half1">
                    <span class="label-text">ALTV</span><br>
                    <input type="text" name="ALTV" required>
                </label>
                <label class="col-one-half1">
                    <span class="label-text">MLTV</span><br>
                    <input type="text" name="MLTV" required>
                </label></br>
                <h1 class="text-left">Histogram Inputs</h1></br></br>
                <label class="col-one-half1">
                    <span class="label-text">width</span><br>
                    <input type="text" name="width" required>
                </label>
                <label class="col-one-half1">
```

```
    <span class="label-text">min</span><br>
    <input type="text" name="min" required>
</label>
<label class="col-one-half1">
    <span class="label-text">max</span><br>
    <input type="text" name="max" required>
</label>
<label class="col-one-half1">
    <span class="label-text">no:of peaks</span><br>
    <input type="text" name="no_of_peaks" required>
</label>
<label class="col-one-half1">
    <span class="label-text">no:of zeros</span><br>
    <input type="text" name="no_of_zeros" required>
</label>
<label class="col-one-half1">
    <span class="label-text">mode</span><br>
    <input type="text" name="mode" required>
</label>
<label class="col-one-half1">
    <span class="label-text">mean</span><br>
    <input type="text" name="mean" required>
</label>
<label class="col-one-half1">
    <span class="label-text">median</span><br>
    <input type="text" name="median" required>
</label>
<label class="col-one-half1">
    <span class="label-text">variance</span><br>
    <input type="text" name="variance" required>
</label>
<label class="col-one-half1">
    <span class="label-text">tendency</span><br>
    <input type="text" name="tendency" required>
</label>



<div class="text-center">
```

```
                    <input type="submit" class="submit" style="font-family: 'Trebuchet
MS';">
                  </div>
                </form>
              </div>
            </div> </br></br>
            <div>
                  <!-- Site footer -->
  <footer class="site-footer">
    <div class="container2">
      <div class="row">
        <div class="col-sm-12 col-md-6">
          <h6>About</h6>
          <p class="text-justify">This Software Allows Doctors/Persons to analyse the
Cardiotocography Data and get Prediction of Fetal Distress. This Software is mainly
decide to save time for Doctors like Gynaecologist and this is user friendly one can
easily understand and they can check their status of Fetal Distress and it gives the tips
and further steps to be taken by the person if any Problem in Fetal.</p>
        </div>


        <div class="col-xs-6 col-md-3">
          <h6>Contact Us</h6>
          <ul class="footer-links">
            <li><a href="https://www.facebook.com/alleshivasai"
target="_blank">Facebook</a></li>
            <li><a href="https://www.instagram.com/shivasai_alle/"
target="_blank">Instagram</a></li>
            <li><a href="https://www.linkedin.com/in/shiva-sai-alle-764b2a1ab/"
target="_blank">Linkedin</a></li>
            <li><a href="https://www.youtube.com/channel/UCfthEj3oCLiFakXtSzhZ7Dw"
target="_blank">Youtube</a></li>
          </ul>
        </div>
          <div class="col-xs-6 col-md-3">
            <h6>Quick Links</h6>
            <ul class="footer-links">
              <li><a href="https://gamecontent391.000webhostapp.com/Quote/stg.pdf"
target="_blank">More Info</a></li>
            </ul>
```

```
          </div>

        </div>
        <div class="col-md-8 col-sm-6 col-xs-12">
           <p class="copyright-text">Copyright &copy; 2021 All Rights Reserved by
         <a href="#">Alle Shiva Sai</a>.
           </p>
          </div>

       </div><br>
  </footer>

      </div>
          </div>
      <script
src='https://cdnjs.cloudflare.com/ajax/libs/jquery/2.1.3/jquery.min.js'></script>
<script
src='https://maxcdn.bootstrapcdn.com/bootstrap/3.3.4/js/bootstrap.min.js'></script>
<script
src='https://cdnjs.cloudflare.com/ajax/libs/jquery.touchswipe/1.6.4/jquery.touchSwipe.mi
n.js'></script>
  </body>
</html>
```

templates/test.html:

```
<html>
  <head>
    <meta charset="UTF-8">
    <title>Fetal Distress Classification</title>
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel='stylesheet'
href='https://maxcdn.bootstrapcdn.com/bootstrap/3.3.5/css/bootstrap.min.css'>
    <link rel="stylesheet" href="/static/home.css">
    <link rel="stylesheet"
href="https://cdnjs.cloudflare.com/ajax/libs/meyer-reset/2.0/reset.min.css">
    <script
src="https://cdnjs.cloudflare.com/ajax/libs/prefixfree/1.0.7/prefixfree.min.js"></script>
    <script
src="https://cdnjs.cloudflare.com/ajax/libs/Chart.js/2.4.0/Chart.min.js"></script>
```

```
  </head>
  <body>
     <div id=parent>

          <div>
             <div class="header1">
               <a href="#default" class="logo" style="font-family: 'Trebuchet MS';
font-size:xx-large;">Fetal Distress Classification Using Cardiotocography</a>
               <div class="header1-right">
                 <a href="https://gamecontent391.000webhostapp.com/Quote/stg.pdf"
target="_blank" style="font-family: 'Lucida Sans', 'Lucida Sans Regular', 'Lucida
Grande', 'Lucida Sans Unicode', Geneva, Verdana, sans-serif;">More Info</a>
               </div>
             </div>
          </div><br>
          <div class="container" style="font-size: x-large;">
             <div>
                <label><h2 class='texte8'>Status of Fetal Distress</h2></label>
             </div>
             <br>
             <div>
                {% if prediction==1.0 %}
                <h2 class="texte2" style="color:rgb(0, 255, 0); font-size:
x-large;">Normal.<br> Please be cool</h2>
                {% elif prediction==2.0 %}
                <h2 class="texte2" style="color:orange; font-size:
x-large;">Suspecious.<br> Be careful! Chances of Distress</h2>
                {% elif prediction==3.0 %}
                <h2 class="texte2" style="color:rgb(255, 0, 0); font-size:
x-large;">Pathological.<br>Need an Emergency Treatment</h2>
                {% else %}
                <h2 class="texte2" style="color:rgb(0, 192, 226); font-size: x-large;">Some
thing went wrong. PLease check once</h2>
                {% endif %}

             </div>
          </div><br>
          <div class="container" style="font-size: x-large;">
             <div>
```

```
            <label><h2 class='texte8'>Analysis of Fetal Distress</h2></label>
        </div>
        <br>
        <div>
            {% if prediction==1.0 %}
            <p class="texte2" style="color:rgb(0, 255, 0); font-size: 0.8em;">
              The Fetal Heart rate is 110-160 bpm and variability is betweeen 5 to 25 bpm.
              The decelerations are non repetive and there are atleast 2 accelerations in 20 minutes of CTG
              The Uterine Contradictions are also normal. So we can conclude that there is no fetal distress and it is normal.
            </p>
            {% elif prediction==2.0 %}
            <p class="texte2" style="color:orange; font-size: 0.8em;">

              The fetal heart rate it is 100bpm to 110bpm or greater than 160 bpm. The variability is greater than 25 bpm or less than 5 bpm for 40 min and also having decelerations like early deceleration variable or single prolonged decelerations and absence of accelerations. The Uterine contractions are 5 and it is somewhat suspicious. Thus we can conclude that 50% chance of occurring fetal distress in future.
            </p>
            {% elif prediction==3.0 %}
            <p class="texte2" style="color:red; font-size: 0.8em;">

              The fetal heart rate is below 100 bpm and a pattern of variable is sinusoidal and greater than 25 bpm or less than 5 bpm for 90 minutes. The decelerations are greater than 3 minutes and they are late decelerations and prolonged deceleration and no accelerations are present. The uterine contractions are greater than 5 and it is dangerous. Thus we can conclude that that fatal is in severe condition need an emergency support.
            </p>
            {% else %}
            <p class="texte2" style="color:rgb(255, 0, 0); font-size: x-large;">Got Some Error</p>
            {% endif %}

        </div>
    </div><br>
```

```
<div class="container" style="font-size: x-large;">
  <div>
     <label><h2 class='texte8'>Graphs</h2></label>
  </div><br>
  <div>
    <div style="height: 300;">
     <canvas id='linechart5' width="600" height="300"></canvas>
     <script>
        var ctx = document.getElementById("linechart5").getContext("2d");
        var linechart = new Chart(ctx,{
           type:"line",
           data: {
              labels: {{ labels5 | safe }},
              datasets: [
                 {
                    data:{{ values5 | safe }},
                    fill:false,
                    borderColor: "rgb(75,192,192)",
                    lineTension:0.1,
                    backgroundColor:[
                'rgba(255, 99, 132, 0.6)',
                'rgba(54, 162, 235, 0.6)',
                'rgba(255, 206, 86, 0.6)',
                'rgba(75, 192, 192, 0.6)',
                'rgba(153, 102, 255, 0.6)',
                'rgba(255, 159, 64, 0.6)'
                ],

                }
              ],

           },
           options:{
              responsive: false,
              legend: {display: false},
              scales: {
                    yAxes: [{
                       ticks: {
                          beginAtZero: true,
                          min: 0
```

```
                    }
                }],
                xAxes: [{
                    barPercentage: 0.6,
                    maxBarThickness: 5 ,
                    minBarLength: 10,
                }]
            },
            title:{
                display:true,
                text:'Basic Important Readings',
                fontSize:15
            }
        }
    });

  </script>
  </div><br>
<div style="height: 300;">
  <canvas id='linechart1' width="600" height="300"></canvas>
  <script>
    var ctx = document.getElementById("linechart1").getContext("2d");
    var linechart = new Chart(ctx,{
        type:"line",
        data: {
            labels: {{ labels1 | safe }},
            datasets: [
                {
                    data:{{ values1 | safe }},
                    fill:false,
                    borderColor: "rgb(75,192,192)",
                    lineTension:0.1,
                    backgroundColor:[
                'rgba(255, 99, 132, 0.6)',
                'rgba(54, 162, 235, 0.6)',
                'rgba(255, 206, 86, 0.6)',
                'rgba(75, 192, 192, 0.6)',
                'rgba(153, 102, 255, 0.6)',
                'rgba(255, 159, 64, 0.6)'
                ],
```

```
            }
        ],

    },
    options:{
        responsive: false,
        legend: {display: false},
        scales: {
                yAxes: [{
                    ticks: {
                        beginAtZero: true,
                        min: 0
                    }
                }],
                xAxes: [{
                    barPercentage: 0.6,
                    maxBarThickness: 5 ,
                    minBarLength: 10,
                }]
        },
        title:{
            display:true,
            text:'Decelerations Readings',
            fontSize:15
        }
    }
  });

</script>
</div><br>
<div style="height: 300;">
  <canvas id='linechart2' width="600" height="300"></canvas>
  <script>
     var ctx = document.getElementById("linechart2").getContext("2d");
     var linechart = new Chart(ctx,{
        type:"line",
        data: {
           labels: {{ labels2 | safe }},
           datasets: [
```

```
        {
            data:{{ values2 | safe }},
            fill:false,
            borderColor: "rgb(75,192,192)",
            lineTension:0.1,
            backgroundColor:[
        'rgba(255, 99, 132, 0.6)',
        'rgba(54, 162, 235, 0.6)',
        'rgba(255, 206, 86, 0.6)',
        'rgba(75, 192, 192, 0.6)',
        'rgba(153, 102, 255, 0.6)',
        'rgba(255, 159, 64, 0.6)'
        ],

        }
    ],

},
options:{
    responsive: false,
    legend: {display: false},
    scales: {
            yAxes: [{
                ticks: {
                    beginAtZero: true,
                    min: 0
                }
            }],
            xAxes: [{
                barPercentage: 0.6,
                maxBarThickness: 5 ,
                minBarLength: 10,
            }]
    },
    title:{
        display:true,
        text:'Variability Readings',
        fontSize:15
    }
}
```

```
        });

    </script>
    </div> <br>
    <div>
      <h3 class="texte2" style="color:rgb(0, 0, 0); font-size:small;"> ASTV : Abnormal Short Term Variability      MSTV: Mean Value of Short Term Variability</h3>
      <h3 class="texte2" style="color:rgb(0, 0, 0); font-size:small;"> ALTV : Abnormal Long Term Variability         MLTV: Mean Value of Long Term Variability</h3>
    </div><br>
    <div style="height: 300;">
      <canvas id='linechart3' width="600" height="300"></canvas>
      <script>
        var ctx = document.getElementById("linechart3").getContext("2d");
        var linechart = new Chart(ctx,{
          type:"bar",
          data: {
            labels: {{ labels3 | safe }},
            datasets: [
              {
                data:{{ values3 | safe }},
                fill:false,
                borderColor: "rgb(75,192,192)",
                lineTension:0.1,
                backgroundColor:[
              'rgba(255, 99, 132, 1)',
              'rgba(54, 162, 235, 1)',
              'rgba(255, 206, 86, 1)',
              'rgba(75, 192, 192, 1)',
              'rgba(153, 102, 255, 1)',
              'rgba(255, 159, 64, 1)',
              'rgba(242, 64, 255, 1)'
              ],

              }
            ],

          },
```

```
        options:{
            responsive: false,
            legend: {display: false},
            scales: {
                    yAxes: [{
                        ticks: {
                            beginAtZero: true,
                            min: 0
                        }
                    }],
                    xAxes: [{
                        barPercentage: 0.6,
                        maxBarThickness: 5 ,
                        minBarLength: 10,
                    }]
            },
            title:{
                display:true,
                text:'Histogram Readings',
                fontSize:15
            }
        }
    });

</script>
</div> <br>
<div style="height: 400;">
  <canvas id='linechart4' width="600" height="400"></canvas>
  <script>
      var ctx = document.getElementById("linechart4").getContext("2d");
      var linechart = new Chart(ctx,{
          type:"polarArea",
          data: {
              labels: {{ labels4 | safe }},
              datasets: [
                  {
                      data:{{ values4 | safe }},
                      fill:false,
                      borderColor: "rgb(75,192,192)",
                      lineTension:0.1,
```

```
                        backgroundColor:[
                    'rgba(255, 99, 132, 1)',
                    'rgba(54, 162, 235, 1)',
                    'rgba(255, 206, 86, 1)',
                    'rgba(75, 192, 192, 1)',
                    'rgba(153, 102, 255, 1)',
                    'rgba(255, 159, 64, 1)',
                    'rgba(242, 64, 255, 1)'
                    ],

                    }
                ],

            },
            options:{
                responsive: false,
                legend: {display: true},
                title:{
                    display:true,
                    text:'Output Comparison',
                    fontSize:15
                }
            }
        });

        </script>
        </div>
    </div>
</div><br>
<div class="container" style="font-size: x-large;">
  <div>
     <label><h2 class='texte8'>Further Steps to be taken</h2></label>
  </div>
  <br>
  <div>
     {% if prediction==1.0 %}
     <p class="texte2" style="color:rgb(0, 255, 0); font-size: 0.8em;">
      <ul class="texte2" style="color:rgb(0, 255, 0); font-size: 0.8em;">
        <ul class="abc">
        <li>No intervention necessary to improve fetal oxygenation state</li>
```

```
            <li>Continue CTG for extra few minutes</li>
          </ul>
          </ul>
        </p>
        {% elif prediction==2.0 %}
        <p class="texte2" style="color:orange; font-size: 0.8em;">
        <ul class="texte2" style="color:orange; font-size: 0.8em;">
        <ul class="abc">
          <li>Correct any underlying causes such as hypotension or uterine
hyperstimulation</li>
          <li>Start one or more conservative measures</li>
          <li>Inform an obstetrician or a senior midwife</li>
          <li>Document a plan for reviewing the whole clinical picture and the CTG
findings</li>
          <li>Action to correct reversible causes if identified, close monitoring or
additional methods to evaluate fetal oxygenation</li>
        </ul>
        </ul>
        </p>
        {% elif prediction==3.0 %}
        <p class="texte2" style="color:red; font-size: 0.8em;">

          <ul class="texte2" style="color:red; font-size: 0.8em;">
            <ul class="abc">
              <li>Obtain a review by an obstetrician and a senior midwife</li>
              <li>Exclude acute events (e.g. cord prolapse, suspected placental
abruption, or suspected uterine rupture)</li>
              <li>Correct any underlying causes, such as hypotension or uterine
hyperstimulation</li>
              <li>Start one or more conservative measures</li>
              <li>If the CTG trace is still pathological after implementing conservative
measures then offer digital fetal scalp stimulation and document the outcome
              </li>
              <li>If the cardiotocograph trace is still pathological after fetal scalp
stimulation consider fetal blood sampling and expediting the birth</li>
              <li>If the CTG trace is still pathological then make preparations for an
urgent birth and expedite the birth if the acute bradycardia persists for 9 min</li>
            </ul>
            </ul>
        </p>
```

```
          {% else %}
          <p class="texte2" style="color:rgb(255, 0, 0); font-size: x-large;">Got Some
Error</p>
          {% endif %}

        </div>
    </div><br>
    <div class="container" style="font-size: x-large;">
      <div>
        <label><h2 class='texte8'>Recommended Medicines</h2></label>
      </div>
      <br>
      <div>
        {% if prediction==1.0 %}
        <h2 class="texte2" style="color:rgb(0, 255, 0); font-size: x-large;">No Need to
take extra Medicines<br> Follow basic Medicine which contains:</h2>
        <ul class="texte2" style="color:rgb(0, 255, 0); font-size: 0.7em;">
          <ul class="abc">
          <li>Folic Acid</li>
          <li>Iron</li>
          <li>Calcium</li>
          <li>Anti-hypertensive drug</li>
          <li>Diuretics</li>
        </ul>
        </ul>
        {% elif prediction==2.0 %}
        <h2 class="texte2" style="color:orange; font-size: x-large;">As condition is
Suspecious below medicines are recommended<br><h3 class="texte2"
style="color:orange; font-size:medium;">(Note: Please Use Medicine Based on the
Patient condition)</h3></h2>
        <ul class="texte2" style="color:rgb(0, 0, 0); font-size: 0.8em;">
          <ul class="abc">
            <li><h3 class="texte9" style="color:rgb(0, 0, 0); font-size:large;">Tocolytics:
</h3><h3 class="texte9" style="color:orange; font-size:large;">Drug that relax the uterus
are thought to improve the blood circulation round the placenta and uterus.</h3></li>
            <li><h3 class="texte9" style="color:rgb(0, 0, 0); font-size:large;">Amiodarone:
</h3><h3 class="texte9" style="color:orange; font-size:large;">This drug has been
described favorably which helps to treat normal fetal problems and it's not most effective
so one can use easily</h3></li>
```

<h3 class="texte9" style="color:rgb(0, 0, 0); font-size:large;">terbutaline: </h3><h3 class="texte9" style="color:orange; font-size:large;">This drug to stop or slow the contractions which are more high and helps when the patient labour is not right to deliver</h3>
<h3 class="texte9" style="color:rgb(0, 0, 0); font-size:large;">Digoxin: </h3><h3 class="texte9" style="color:orange; font-size:large;">This drug is the most common drug used to treat FT. After digoxin, sotalol seems to be the most promising agent, specifically in atrial flutter and nonhydropic supraventricular tachycardia (SVT)</h3>

{% elif prediction==3.0 %}
<h2 class="texte2" style="color:rgb(255, 0, 0); font-size: x-large;">As condition is Serious below medicines are recommended
<h3 class="texte2" style="color:rgb(255, 0, 0); font-size:medium;">(Note: Please Use Medicine Based on the Patient condition)</h3></h2>
<ul class="texte2" style="color:rgb(0, 0, 0); font-size: 0.8em;">
<ul class="abc">
<h3 class="texte9" style="color:rgb(0, 0, 0); font-size:large;">Tocolytics: </h3><h3 class="texte9" style="color:rgb(255, 0, 0); font-size:large;">Drug that relax the uterus are thought to improve the blood circulation round the placenta and uterus.</h3>
<h3 class="texte9" style="color:rgb(0, 0, 0); font-size:large;">Amiodarone: </h3><h3 class="texte9" style="color:rgb(255, 0, 0); font-size:large;">This drug has been described favorably which helps to treat normal fetal problems and it's not most effective so one can use easily</h3>
<h3 class="texte9" style="color:rgb(0, 0, 0); font-size:large;">terbutaline: </h3><h3 class="texte9" style="color:rgb(255, 0, 0); font-size:large;">This drug to stop or slow the contractions which are more high and helps when the patient labour is not right to deliver</h3>
<h3 class="texte9" style="color:rgb(0, 0, 0); font-size:large;">Digoxin: </h3><h3 class="texte9" style="color:rgb(255, 0, 0); font-size:large;">This drug is the most common drug used to treat FT. After digoxin, sotalol seems to be the most promising agent, specifically in atrial flutter and nonhydropic supraventricular tachycardia (SVT)</h3>
<h3 class="texte9" style="color:rgb(0, 0, 0); font-size:large;">Amnioinfusion: </h3><h3 class="texte9" style="color:rgb(255, 0, 0); font-size:large;">The insertion of this drug fluid into the amniotic cavity to alleviate compression of the umbilical cord</h3>

```
            <li><h3 class="texte9" style="color:rgb(0, 0, 0); font-size:large;">Flecainide:
</h3><h3 class="texte9" style="color:rgb(255, 0, 0); font-size:large;">This drug is a very
effective drug in the treatment of fetal SVT, although concerns about possible
pro-arrhythmic effects have limited its use</h3></li>
            <li><h3 class="texte9" style="color:rgb(0, 0, 0); font-size:large;">oxytocin:(try
not to use this drug) </h3><h3 class="texte9" style="color:rgb(255, 0, 0);
font-size:large;">This drug that makes the uterus contract more frequently and more
forcefully which leads to immediate deliver</h3></li>
          </ul>
          </ul>
        {% else %}
        <h2 class="texte2" style="color:rgb(0, 192, 226); font-size: x-large;">Some thing
went wrong. PLease check once</h2>
        {% endif %}

      </div>
  </div><br>
        <div>
          <button type="button" class="btn btn-light btn-lg"
onclick="window.print()">Print</button>
        </div>
        <div>
           <!-- Site footer -->
<footer class="site-footer">
 <div class="container2">
  <div class="row">
    <div class="col-sm-12 col-md-6">
      <h6>About</h6>
      <p class="text-justify">This Software Allows Doctors/Persons to analyse the
Cardiotocography Data and get Prediction of Fetal Distress. This Software is mainly
decide to save time for Doctors like Gynaecologist and this is user friendly one can
easily understand and they can check their status of Fetal Distress and it gives the tips
and further steps to be taken by the person if any Problem in Fetal.</p>
    </div>


    <div class="col-xs-6 col-md-3">
      <h6>Contact Us</h6>
      <ul class="footer-links">
```

```
        <li><a href="https://www.facebook.com/alleshivasai"
target="_blank">Facebook</a></li>
        <li><a href="https://www.instagram.com/shivasai_alle/"
target="_blank">Instagram</a></li>
        <li><a href="https://www.linkedin.com/in/shiva-sai-alle-764b2a1ab/"
target="_blank">Linkedin</a></li>
        <li><a href="https://www.youtube.com/channel/UCfthEj3oCLiFakXtSzhZ7Dw"
target="_blank">Youtube</a></li>
      </ul>
    </div>
      <div class="col-xs-6 col-md-3">
        <h6>Quick Links</h6>
        <ul class="footer-links">
          <li><a href="https://gamecontent391.000webhostapp.com/Quote/stg.pdf"
target="_blank">More Info</a></li>
        </ul>
      </div>

    </div>
    <div class="col-md-8 col-sm-6 col-xs-12">
        <p class="copyright-text">Copyright &copy; 2021 All Rights Reserved by
     <a href="#">Alle Shiva Sai</a>.
        </p>
      </div>

  </div><br>
</footer>

 </div>
      </div>
  </body>
</html>
```

app.py

```
from flask import Flask,render_template,request
import numpy as np
import pickle
import pandas as pd
```

```
from sklearn.svm import SVC
from sklearn.preprocessing import StandardScaler
from sklearn import preprocessing
from sklearn.ensemble import RandomForestClassifier
app = Flask(__name__)
model = pickle.load(open('modelrf.pkl', 'rb'))
scaler = pickle.load(open('scaler.pkl', 'rb'))
@app.route('/')
def index():
  return render_template('home.html')
@app.route('/predict',methods=['POST'])
def predict():
  features = [float(x) for x in request.form.values()]
  data = features
  final_features = [np.array(features)]
  final_features = scaler.transform(final_features)
  prediction = model.predict(final_features)
  labels = ['Baseline Value', 'Accelerations', 'Fetal Movement',
    'Uterine Contractions', 'Light Decelerations', 'Severe Decelerations',
    'Prolongued Decelerations', 'ASTV',
    'MSTV',
    'ALTV',
    'MLTV', 'Width',
    'Min', 'Max', 'No: of peaks',
    'No: of zeros', 'Mode', 'Mean',
    'Median', 'Variance', 'Tendency',
    'Fetal Status']
  data1 = data[4:7]
  labels1 = labels[4:7]
  data2 = data[7:11]
  labels2 = labels[7:11]
  data31 = data[11:14]
  data32 = data[16:20]
  data3 = data31+data32
  labels31 = labels[11:14]
  labels32 = labels[16:20]
  labels3 = labels31 + labels32
  data5 = data[1:4]
  labels5 = labels[1:4]
  data41 = [100,110,160]
```

```
    data41.append(data[0])
    data4 = data41
    labels41 = ['Pathological','Suspecious','Normal','Fetal Heartrate']
    labels4 = labels41

    return
render_template("test.html",values1=data1,labels1=labels1,values2=data2,labels2=labe
ls2,values3=data3,labels3=labels3,values4=data4,labels4=labels4,values5=data5,label
s5=labels5,prediction=prediction[0])

if __name__ == '__main__':
    app.run()
model.py
import numpy as np
import pandas as pd
from sklearn.preprocessing import StandardScaler
from sklearn import preprocessing
from sklearn.model_selection import train_test_split
from sklearn.ensemble import RandomForestClassifier
from sklearn.ensemble import GradientBoostingClassifier
from sklearn.ensemble import ExtraTreesClassifier
from sklearn.ensemble import StackingClassifier
from sklearn.model_selection import cross_val_score
from sklearn.metrics import precision_score, recall_score, confusion_matrix,
classification_report, accuracy_score, f1_score
import pickle
df = pd.read_csv("fetal_health.csv")
X=df.drop(["fetal_health"],axis=1)
y=df["fetal_health"]
col_names = list(X.columns)
scaler = preprocessing.StandardScaler()
X_df= scaler.fit_transform(X)
X_df = pd.DataFrame(X_df, columns=col_names)
X_train, X_test, y_train,y_test = train_test_split(X_df,y,test_size=0.2,random_state=42)
from sklearn.ensemble import RandomForestClassifier
rf = RandomForestClassifier()
rf.fit(X_train, y_train)
from sklearn.metrics import precision_score, recall_score, confusion_matrix,
classification_report, accuracy_score, f1_score
pred_rf = rf.predict(X_test)
```

```
accuracy = accuracy_score(y_test, pred_rf)
print(accuracy)
pickle.dump(rf, open('modelrf.pkl', 'wb'))
pickle.dump(scaler, open('scaler.pkl', 'wb'))
model = pickle.load(open('modelrf.pkl', 'rb'))
print(model)
```

Fetal.ipynd

```
import numpy as np
import pandas as pd
df = pd.read_csv("fetal_health.csv")
df.head()
df.describe().T
import seaborn as sns
colours=["#f7b2b0","#8f7198", "#003f5c"]
sns.countplot(data= df, x="fetal_health",palette=colours)
import matplotlib.pyplot as plt
plt.figure(figsize=(15,15))
cmap = sns.diverging_palette(250, 10, s=80, l=55, n=9, as_cmap=True)
sns.heatmap(df.corr(),annot=True, cmap=cmap, center=0)
sns.lmplot(data =df,x="accelerations",y="fetal_movement",palette=colours,
hue="fetal_health",legend_out=False)
plt.show()
sns.lmplot(data =df,x="prolongued_decelerations",y="fetal_movement",palette=colours,
hue="fetal_health",legend_out=False)
plt.show()
sns.lmplot(data
=df,x="abnormal_short_term_variability",y="fetal_movement",palette=colours,
hue="fetal_health",legend_out=False)
plt.show()
sns.lmplot(data
=df,x="mean_value_of_long_term_variability",y="fetal_movement",palette=colours,
hue="fetal_health",legend_out=False)
plt.show()
shades =["#f7b2b0","#c98ea6","#8f7198","#50587f", "#003f5c"]
plt.figure(figsize=(20,10))
sns.boxenplot(data = df,palette = shades)
plt.xticks(rotation=90)
```

```
plt.show()
X=df.drop(["fetal_health"],axis=1)
y=df["fetal_health"]
from sklearn.preprocessing import StandardScaler
col_names = list(X.columns)
from sklearn import preprocessing
scaler = preprocessing.StandardScaler()
X_df= scaler.fit_transform(X)
X_df = pd.DataFrame(X_df, columns=col_names)
X_df.describe().T
plt.figure(figsize=(20,10))
sns.boxenplot(data = X_df,palette = shades)
plt.xticks(rotation=90)
plt.show()
from sklearn.model_selection import train_test_split
X_train, X_test, y_train,y_test = train_test_split(X_df,y,test_size=0.3,random_state=42)
from sklearn.ensemble import RandomForestClassifier
rf = RandomForestClassifier()
rf.fit(X_train, y_train)
from sklearn.metrics import precision_score, recall_score, confusion_matrix,
classification_report, accuracy_score, f1_score
pred_rf = rf.predict(X_test)
accuracy = accuracy_score(y_test, pred_rf)
print(accuracy)
from sklearn.model_selection import GridSearchCV
from sklearn.model_selection import cross_val_score
parameters = {
  'n_estimators': [100,150, 200,500,700,900],
  'max_features': ['auto', 'sqrt', 'log2'],
  'max_depth' : [4,6,8,12,14,16],
  'criterion' :['gini', 'entropy'],
  'n_jobs':[-1,1,None]
}
#Fitting the trainingset to find parameters with best accuracy
CV_rfc = GridSearchCV(estimator=RandomForestClassifier(), param_grid=parameters,
cv= 5)
RF_model = RandomForestClassifier(criterion= 'entropy',
max_depth= 12,
max_features= 'auto',
n_estimators= 150,
```

```
n_jobs= None)
RF_model.fit(X_train, y_train)
#Testing the Model on test set
predictions=RF_model.predict(X_test)
acccuracy= accuracy_score(y_test,predictions)
acccuracy
acccuracy = accuracy_score(y_test, predictions)
recall = recall_score(y_test, predictions, average="weighted")
precision = precision_score(y_test, predictions, average="weighted")
f1_score = f1_score(y_test, predictions, average="micro")
print("********* Random Forest Results *********")
print("Accuracy : ", acccuracy)
print("Recall : ", recall)
print("Precision : ", precision)
print("F1 Score : ", f1_score)
rf2 = RandomForestClassifier(criterion="gini", n_estimators = 100, min_samples_leaf=1,
min_samples_split=2, random_state=42)
rf2.fit(X_train, y_train)
predictions2=rf2.predict(X_test)
acccuracy= accuracy_score(y_test,predictions2)
acccuracy
confusion_matrix(y_test, predictions)
confusion_matrix(y_test, predictions2)
```