**DATA WAREHOUSING & MINING**

**LOAN APPLICATION ANALYSIS**

**CODE:**

**app\_loan.py**

from flask import Flask, render\_template, request, abort, send\_from\_directory, url\_for, redirect

from sklearn.preprocessing import Normalizer

import pandas as pd

import numpy as np

import joblib

import io

import base64

import matplotlib.pyplot as plt

app = Flask(\_\_name\_\_)

@app.route('/', methods = ['POST', 'GET'])

def form():

return render\_template('form.html')

@app.route('/predict', methods = ['POST', 'GET'])

def predict():

if request.method == "GET":

return redirect(url\_for('form'))

elif request.method == "POST":

name = str(request.form['Name'])

job = str(request.form['Job'])

income = int(request.form['AppIn'])

co\_income = int(request.form['CoIn'])

total = int(income + co\_income)

loan = int(request.form['LoAm'])

term = int(request.form['Term'])

gender = int(request.form['inlineRadioOptions1'])

depent = int(request.form['inlineRadioOptions2'])

marriage = int(request.form['inlineRadioOptions3'])

edu = int(request.form['inlineRadioOptions4'])

credit = int(request.form['inlineRadioOptions5'])

area = int(request.form['inlineRadioOptions6'])

std = np.array([loan, term, total])

std = np.reshape(std, (1,-1))

transform = fit\_norm.transform(std)

print(transform)

total\_new = transform[0][2]

loan\_new = transform[0][0]

term\_new = transform[0][1]

x = np.array([loan\_new, term\_new, total\_new, marriage, depent, edu, credit, area])

x = np.reshape(x, (1,-1))

pred = model.predict(x)

pred\_proba = model.predict\_proba(x)

prediksi = pred[0]

prediksi\_proba = pred\_proba[0]

if prediksi == 1:

status = 'Approved'

else:

status = 'Not Approved'

if gender == 0:

sex = 'Female'

else:

sex = 'Male'

if marriage == 0:

nikah = 'No'

else:

nikah = 'Yes'

if edu == 0:

pend = 'Graduate'

else:

pend = 'Non Graduate'

if credit == 0:

kredit = 'Never'

else:

kredit = 'Yes'

if area == 0:

lahan = 'Rural'

elif area == 1:

lahan = 'Semi-Urban'

else:

lahan = 'Urban'

labels = ['Not Approved', 'Approved']

plt.figure(figsize=(5,5))

plt.title('Loan Egibility Percentage')

plt.pie(x= prediksi\_proba, explode=[0.05,0.05],

labels=labels, autopct='%1.1f%%', shadow=True)

plt.tight\_layout()

img = io.BytesIO()

plt.savefig(img, format='png', transparent=True)

plt.close()

img.seek(0)

pict\_url = base64.b64encode(img.getvalue()).decode()

pict = f'data:image/png;base64,{pict\_url}'

take\_result = {'nama': name, 'pekerjaan': job, 'sex': sex,

'keluarga': depent, 'nikah': nikah, 'pendidikan': pend,

'kredit': kredit, 'lahan': lahan, 'pendapatan': total,

'pinjaman': loan, 'jangka': term, 'prediksi': status}

return render\_template('result.html', data = take\_result, gambar = pict)

else:

return redirect(url\_for('form'))

@app.route('/filetemp/<path:path>')

def filetemp(path):

return send\_from\_directory('./templates/image', path)

if \_\_name\_\_ == '\_\_main\_\_':

model = joblib.load('rfc\_model')

fit\_norm = joblib.load('fit\_norm')

app.run(debug=True, port=3000)

**form.html**

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

<title>Loan Approval Checker</title>

<link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css" integrity="sha384-ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T" crossorigin="anonymous">

<style>

body {

background-color: rgb(34, 200, 238);

font-family: Segoe UI;

text-align: center;

vertical-align: middle

}

form {

display: inline-block;

margin-left: auto;

margin-right: auto;

text-align: left;

vertical-align: middle

}

</style>

</head>

<body>

<br>

<br>

<img src="C:\Users\lenovo\Downloads\3 - 1\DATA SCIENCE PE-2 (DWM)\VS CODES\Loan\_Approval\_Prediction-master\templates\image\images.png" width="600px" height="auto"/>

<br>

<br>

<form method='POST' action="http://127.0.0.1:3000/predict">

<div class="container" style="margin-top: 2%;">

<center>

<p style="color: blue;">FILL IN THE FORM</p>

</center>

<div class="row">

<div class="col">

<div class="form-group">

<label for="formName">Name</label>

<input type="text" class="form-control" name="Name" id="formName">

<br>

<label for="formJob">Job</label>

<input type="text" class="form-control" name="Job" id="formJob">

<br>

<label>Applicant Income (US $)</label>

<input type="number" class="form-control" id="AI" name="AppIn" step="0.1" min=0>

<br>

<label>Co Applicant Income (US $)</label>

<input type="number" class="form-control" id="CoI" name="CoIn" step="0.1" min=0>

<br>

<label>Loan Amount (Thousand US $)</label>

<input type="number" class="form-control" id="LoA" name="LoAm" step="0.1" min=0>

<br>

<label>Loan Amount Term (Days)</label>

<input type="number" class="form-control" id="LoTe" name="Term" step="1" min=0>

<br>

</div>

</div>

<div class="col">

<label for="formGender">Gender: </label><br>

<div class="form-check form-check-inline">

<input class="form-check-input" type="radio" name="inlineRadioOptions1" id="genderMen"

value=1>

<label class="form-check-label" for="genderMen">Male</label>

</div>

<div class="form-check form-check-inline">

<input class="form-check-input" type="radio" name="inlineRadioOptions1" id="genderWomen"

value=0>

<label class="form-check-label" for="genderWomen">Female</label>

</div>

<br><br>

<label for="formDep">Dependents: </label><br>

<div class="form-check form-check-inline">

<input class="form-check-input" type="radio" name="inlineRadioOptions2" id="dep0"

value=0>

<label class="form-check-label" for="dep0">0</label>

</div>

<div class="form-check form-check-inline">

<input class="form-check-input" type="radio" name="inlineRadioOptions2" id="dep1"

value=1>

<label class="form-check-label" for="dep1">1</label>

</div>

<div class="form-check form-check-inline">

<input class="form-check-input" type="radio" name="inlineRadioOptions2" id="dep2"

value=2>

<label class="form-check-label" for="dep2">2</label>

</div>

<div class="form-check form-check-inline">

<input class="form-check-input" type="radio" name="inlineRadioOptions2" id="dep3"

value=3>

<label class="form-check-label" for="dep3">>2</label>

</div>

<br><br>

<label for="formMar">Marriage: </label><br>

<div class="form-check form-check-inline">

<input class="form-check-input" type="radio" name="inlineRadioOptions3" id="marNo"

value=0>

<label class="form-check-label" for="marNo">No</label>

</div>

<div class="form-check form-check-inline">

<input class="form-check-input" type="radio" name="inlineRadioOptions3" id="marYes"

value=1>

<label class="form-check-label" for="marYes">Yes</label>

</div>

<br><br>

<label for="formEdu">Education: </label><br>

<div class="form-check form-check-inline">

<input class="form-check-input" type="radio" name="inlineRadioOptions4" id="eduNo"

value=1>

<label class="form-check-label" for="eduNo">Non Graduate</label>

</div>

<div class="form-check form-check-inline">

<input class="form-check-input" type="radio" name="inlineRadioOptions4" id="eduYes"

value=0>

<label class="form-check-label" for="eduYes">Graduate</label>

</div>

<br><br>

<label for="formHis">Credit History: </label><br>

<div class="form-check form-check-inline">

<input class="form-check-input" type="radio" name="inlineRadioOptions5" id="hisNo"

value=0>

<label class="form-check-label" for="hisNo">Never</label>

</div>

<div class="form-check form-check-inline">

<input class="form-check-input" type="radio" name="inlineRadioOptions5" id="hisYes"

value=1>

<label class="form-check-label" for="hisYes">Yes</label>

</div>

<br><br>

<label for="formPro">Property Area: </label><br>

<div class="form-check form-check-inline">

<input class="form-check-input" type="radio" name="inlineRadioOptions6" id="area0"

value=0>

<label class="form-check-label" for="area0">Rural</label>

</div>

<div class="form-check form-check-inline">

<input class="form-check-input" type="radio" name="inlineRadioOptions6" id="area1"

value=1>

<label class="form-check-label" for="dep1">Semiurban</label>

</div>

<div class="form-check form-check-inline">

<input class="form-check-input" type="radio" name="inlineRadioOptions6" id="area2"

value=2>

<label class="form-check-label" for="area2">Urban</label>

</div>

<br><br><br><br>

</div>

</div>

<center>

<input class="btn btn-primary btn-lg" href="/predict" style="color: white;" role="button"

type="submit" value="Predict" />

</center>

</div>

</form>

</body>

</html>

**result.html**

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

<title>Loan Eligibility</title>

<link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css" integrity="sha384-ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T" crossorigin="anonymous">

<style>

body {

background-color: rgb(34, 200, 238);

font-family: Segoe UI;

text-align: center;

vertical-align: middle

}

form {

display: inline-block;

margin-left: auto;

margin-right: auto;

text-align: left;

vertical-align: middle

}

</style>

</head>

<body>

<div>

<form action="http://127.0.0.1:2070">

<nav style="background-color: rgb(34, 200, 238);text-align: center; height: 50px; padding: 5px;">

<a class="navbar-brand" href="/" style="color: white;">Loan Egibility Checker</a>

</nav>

</form>

</div>

<center>

<h1 style="background-color:#00D0FF; width: 900px; padding: 10px 0px 10px;;

border: 4px solid blue; text-align:justify; opacity:0.9; font-size: large;">

<center>

<p style="color: blue; font: size 100px;">LOAN EGIBILITY</p>

</center>

<div class="container">

<div class="row justify-content-md-center">

<div class="col col-lg-2">Name</div>

<div class="col col-lg-2">{{data['nama']}}</div>

<div class="col col-lg-2">Credit History</div>

<div class="col col-lg-2">{{data['kredit']}}</div>

<div class="w-100"></div>

<div class="col col-lg-2">Gender</div>

<div class="col col-lg-2">{{data['sex']}}</div>

<div class="col col-lg-2">Property Area</div>

<div class="col col-lg-2">{{data['lahan']}}</div>

<div class="w-100"></div>

<div class="col col-lg-2">Job</div>

<div class="col col-lg-2">{{data['pekerjaan']}}</div>

<div class="col col-lg-2">Total Income</div>

<div class="col col-lg-2">US $ {{data['pendapatan']}}</div>

<div class="w-100"></div>

<div class="col col-lg-2">Dependents</div>

<div class="col col-lg-2">{{data['keluarga']}}</div>

<div class="col col-lg-2">Loan Amount</div>

<div class="col col-lg-2">US $ {{data['pinjaman']}},000</div>

<div class="w-100"></div>

<div class="col col-lg-2">Marital Status</div>

<div class="col col-lg-2">{{data['nikah']}}</div>

<div class="col col-lg-2">Loan Term</div>

<div class="col col-lg-2">{{data['jangka']}} Days</div>

<div class="w-100"></div>

<div class="col col-lg-2">Education</div>

<div class="col col-lg-2">{{data['pendidikan']}}</div>

<div class="col col-lg-2">Status</div>

<div class="col col-lg-2">{{data['prediksi']}}</div>

</div>

</div>

<center>

<img src="{{gambar}}" align='middle'/>

</center>

</h1>

</center>

</body>

</html>