In [1]:
```
!pip install gradio
```

```
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: gradio in c:\users\aikhya k\appdata\roaming\python
\python313\site-packages (5.46.0)
Requirement already satisfied: aiofiles<25.0,>=22.0 in c:\users\aikhya k\appdata
\roaming\python\python313\site-packages (from gradio) (24.1.0)
Requirement already satisfied: anyio<5.0,>=3.0 in d:\programdata\anaconda3\lib\si
te-packages (from gradio) (4.7.0)
Requirement already satisfied: audioop-lts<1.0 in c:\users\aikhya k\appdata\roami
ng\python\python313\site-packages (from gradio) (0.2.2)
Requirement already satisfied: brotli>=1.1.0 in c:\users\aikhya k\appdata\roaming
\python\python313\site-packages (from gradio) (1.1.0)
Requirement already satisfied: fastapi<1.0,>=0.115.2 in c:\users\aikhya k\appdata
\roaming\python\python313\site-packages (from gradio) (0.116.2)
Requirement already satisfied: ffmpy in c:\users\aikhya k\appdata\roaming\python
\python313\site-packages (from gradio) (0.6.1)
Requirement already satisfied: gradio-client==1.13.0 in c:\users\aikhya k\appdata
\roaming\python\python313\site-packages (from gradio) (1.13.0)
Requirement already satisfied: groovy~=0.1 in c:\users\aikhya k\appdata\roaming\p
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Requirement already satisfied: httpx<1.0,>=0.24.1 in d:\programdata\anaconda3\lib
\site-packages (from gradio) (0.28.1)
Requirement already satisfied: huggingface-hub<1.0,>=0.33.5 in c:\users\aikhya k
\appdata\roaming\python\python313\site-packages (from gradio) (0.35.0)
Requirement already satisfied: jinja2<4.0 in d:\programdata\anaconda3\lib\site-pa
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Requirement already satisfied: markupsafe<4.0,>=2.0 in d:\programdata\anaconda3\l
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Requirement already satisfied: numpy<3.0,>=1.0 in d:\programdata\anaconda3\lib\si
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Requirement already satisfied: orjson~=3.0 in c:\users\aikhya k\appdata\roaming\p
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kages (from gradio) (24.2)
Requirement already satisfied: pandas<3.0,>=1.0 in d:\programdata\anaconda3\lib\s
ite-packages (from gradio) (2.2.3)
Requirement already satisfied: pillow<12.0,>=8.0 in d:\programdata\anaconda3\lib
\site-packages (from gradio) (11.1.0)
Requirement already satisfied: pydantic<2.12,>=2.0 in d:\programdata\anaconda3\li
b\site-packages (from gradio) (2.10.3)
Requirement already satisfied: pydub in c:\users\aikhya k\appdata\roaming\python
\python313\site-packages (from gradio) (0.25.1)
Requirement already satisfied: python-multipart>=0.0.18 in c:\users\aikhya k\appd
ata\roaming\python\python313\site-packages (from gradio) (0.0.20)
Requirement already satisfied: pyyaml<7.0,>=5.0 in d:\programdata\anaconda3\lib\s
ite-packages (from gradio) (6.0.2)
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ython\python313\site-packages (from gradio) (0.13.1)
Requirement already satisfied: safehttpx<0.2.0,>=0.1.6 in c:\users\aikhya k\appda
ta\roaming\python\python313\site-packages (from gradio) (0.1.6)
Requirement already satisfied: semantic-version~=2.0 in c:\users\aikhya k\appdata
\roaming\python\python313\site-packages (from gradio) (2.10.0)
Requirement already satisfied: starlette<1.0,>=0.40.0 in c:\users\aikhya k\appdat
a\roaming\python\python313\site-packages (from gradio) (0.48.0)
Requirement already satisfied: tomlkit<0.14.0,>=0.12.0 in d:\programdata\anaconda
3\lib\site-packages (from gradio) (0.13.2)
Requirement already satisfied: typer<1.0,>=0.12 in c:\users\aikhya k\appdata\roam
ing\python\python313\site-packages (from gradio) (0.17.4)
Requirement already satisfied: typing-extensions~=4.0 in d:\programdata\anaconda3
\lib\site-packages (from gradio) (4.12.2)
Requirement already satisfied: uvicorn>=0.14.0 in c:\users\aikhya k\appdata\roami
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ng\python\python313\site-packages (from gradio) (0.35.0)
Requirement already satisfied: fsspec in d:\programdata\anaconda3\lib\site-packag
es (from gradio-client==1.13.0->gradio) (2025.3.2)
Requirement already satisfied: websockets<16.0,>=10.0 in c:\users\aikhya k\appdat
a\roaming\python\python313\site-packages (from gradio-client==1.13.0->gradio) (1
5.0.1)
Requirement already satisfied: idna>=2.8 in d:\programdata\anaconda3\lib\site-pac
kages (from anyio<5.0,>=3.0->gradio) (3.7)
Requirement already satisfied: sniffio>=1.1 in d:\programdata\anaconda3\lib\site-
packages (from anyio<5.0,>=3.0->gradio) (1.3.0)
Requirement already satisfied: certifi in d:\programdata\anaconda3\lib\site-packa
ges (from httpx<1.0,>=0.24.1->gradio) (2025.4.26)
Requirement already satisfied: httpcore==1.* in d:\programdata\anaconda3\lib\site
-packages (from httpx<1.0,>=0.24.1->gradio) (1.0.9)
Requirement already satisfied: h11>=0.16 in d:\programdata\anaconda3\lib\site-pac
kages (from httpcore==1.*->httpx<1.0,>=0.24.1->gradio) (0.16.0)
Requirement already satisfied: filelock in d:\programdata\anaconda3\lib\site-pack
ages (from huggingface-hub<1.0,>=0.33.5->gradio) (3.17.0)
Requirement already satisfied: requests in d:\programdata\anaconda3\lib\site-pack
ages (from huggingface-hub<1.0,>=0.33.5->gradio) (2.32.3)
Requirement already satisfied: tqdm>=4.42.1 in d:\programdata\anaconda3\lib\site-
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Requirement already satisfied: python-dateutil>=2.8.2 in d:\programdata\anaconda3
\lib\site-packages (from pandas<3.0,>=1.0->gradio) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in d:\programdata\anaconda3\lib\site-
packages (from pandas<3.0,>=1.0->gradio) (2024.1)
Requirement already satisfied: tzdata>=2022.7 in d:\programdata\anaconda3\lib\sit
e-packages (from pandas<3.0,>=1.0->gradio) (2025.2)
Requirement already satisfied: annotated-types>=0.6.0 in d:\programdata\anaconda3
\lib\site-packages (from pydantic<2.12,>=2.0->gradio) (0.6.0)
Requirement already satisfied: pydantic-core==2.27.1 in d:\programdata\anaconda3
\lib\site-packages (from pydantic<2.12,>=2.0->gradio) (2.27.1)
Requirement already satisfied: click>=8.0.0 in d:\programdata\anaconda3\lib\site-
packages (from typer<1.0,>=0.12->gradio) (8.1.8)
Requirement already satisfied: shellingham>=1.3.0 in d:\programdata\anaconda3\lib
\site-packages (from typer<1.0,>=0.12->gradio) (1.5.0)
Requirement already satisfied: rich>=10.11.0 in d:\programdata\anaconda3\lib\site
-packages (from typer<1.0,>=0.12->gradio) (13.9.4)
Requirement already satisfied: colorama in d:\programdata\anaconda3\lib\site-pack
ages (from click>=8.0.0->typer<1.0,>=0.12->gradio) (0.4.6)
Requirement already satisfied: six>=1.5 in d:\programdata\anaconda3\lib\site-pack
ages (from python-dateutil>=2.8.2->pandas<3.0,>=1.0->gradio) (1.17.0)
Requirement already satisfied: markdown-it-py>=2.2.0 in d:\programdata\anaconda3
\lib\site-packages (from rich>=10.11.0->typer<1.0,>=0.12->gradio) (2.2.0)
Requirement already satisfied: pygments<3.0.0,>=2.13.0 in d:\programdata\anaconda
3\lib\site-packages (from rich>=10.11.0->typer<1.0,>=0.12->gradio) (2.19.1)
Requirement already satisfied: mdurl~=0.1 in d:\programdata\anaconda3\lib\site-pa
ckages (from markdown-it-py>=2.2.0->rich>=10.11.0->typer<1.0,>=0.12->gradio) (0.
1.0)
Requirement already satisfied: charset-normalizer<4,>=2 in d:\programdata\anacond
a3\lib\site-packages (from requests->huggingface-hub<1.0,>=0.33.5->gradio) (3.3.
2)
Requirement already satisfied: urllib3<3,>=1.21.1 in d:\programdata\anaconda3\lib
\site-packages (from requests->huggingface-hub<1.0,>=0.33.5->gradio) (2.3.0)
```

In [2]:
```
import pandas as pd
import matplotlib.pyplot as plt
import gradio as gr
from sklearn.model_selection import train_test_split
from sklearn.ensemble import RandomForestClassifier
```

```
import joblib

# ------------------------
# 1. Create Dataset
# ------------------------
data = pd.DataFrame([
    [92,38,91,22,145,0.9,37.6,1,58,3,1],
    [78,65,97,16,120,1.1,36.8,0,42,0,0],
    [101,35,89,24,160,0.7,38.2,1,65,4,1],
    [84,50,95,18,130,1.0,37.0,0,55,1,0],
    [110,30,88,25,170,0.6,38.5,1,70,5,1],
    [72,60,98,14,115,1.3,36.5,0,35,0,0],
    [95,42,90,20,140,0.8,37.4,1,60,2,1],
    [79,58,96,17,125,1.2,36.9,0,47,0,0],
    [102,33,90,23,150,0.7,38.0,1,63,3,1],
    [88,49,94,18,135,1.0,37.2,0,50,1,0],
    [92,38,91,22,145,0.9,37.6,1,58,3,1],
    [78,65,97,16,120,1.1,36.8,0,42,0,0],
    [101,35,89,24,160,0.7,38.2,1,65,4,1],
    [84,50,95,18,130,1.0,37.0,0,55,1,0],
    [110,30,88,25,170,0.6,38.5,1,70,5,1],
    [72,60,98,14,115,1.3,36.5,0,35,0,0],
    [95,42,90,20,140,0.8,37.4,1,60,2,1],
    [79,58,96,17,125,1.2,36.9,0,47,0,0],
    [102,33,90,23,150,0.7,38.0,1,63,3,1],
    [88,49,94,18,135,1.0,37.2,0,50,1,0],
    [92,38,91,22,145,0.9,37.6,1,58,3,1],
    [78,65,97,16,120,1.1,36.8,0,42,0,0],
    [101,35,89,24,160,0.7,38.2,1,65,4,1],
    [84,50,95,18,130,1.0,37.0,0,55,1,0],
    [110,30,88,25,170,0.6,38.5,1,70,5,1],
    [72,60,98,14,115,1.3,36.5,0,35,0,0],
    [95,42,90,20,140,0.8,37.4,1,60,2,1],
    [79,58,96,17,125,1.2,36.9,0,47,0,0],
    [102,33,90,23,150,0.7,38.0,1,63,3,1],
    [88,49,94,18,135,1.0,37.2,0,50,1,0]
], columns=[
    'heart_rate','hr_variability','spo2','respiratory_rate',
    'blood_pressure','acceleration','skin_temp','ecg_signal_type',
    'age','symptom_score','is_infarction'
])

# ------------------------
# 2. Train Model
# ------------------------
X = data.drop("is_infarction", axis=1)
y = data["is_infarction"]

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_
```

```
model = RandomForestClassifier(n_estimators=100, random_state=42)
model.fit(X_train, y_train)

# ------------------------
# 3. Save + Load Model (in same file)
# ------------------------
joblib.dump(model, "rf_model.pkl")
model = joblib.load("rf_model.pkl")

# ------------------------
# 4. Prediction Function
# ------------------------
def predict_infarction(heart_rate, hr_variability, spo2, respiratory_rate,
                       blood_pressure, acceleration, skin_temp, ecg_signal_type,
                       age, symptom_score):

    input_data = pd.DataFrame([[heart_rate, hr_variability, spo2, respiratory_ra
                                blood_pressure, acceleration, skin_temp, ecg_sig
                                age, symptom_score]],
                              columns=X.columns)

    pred = model.predict(input_data.values)[0]
    probs = model.predict_proba(input_data.values)[0]

    # Colorful Pie Chart
    fig, ax = plt.subplots(figsize=(5,7))
    ax.pie(
        probs,
        labels=["✅ No Infarction","🚨 Infarction"],
        autopct='%1.1f%%',
        startangle=90,
        colors=["#4CAF50", "#F44336"],  # green, red
        explode=(0.05, 0.1),
        shadow=True
    )
    ax.set_title("Prediction Probability", fontsize=14, fontweight="bold", color

    # Colorful output
    if pred == 1:
        result = "🚨 <span style='color:red; font-weight:bold'>Infarction Detec
    else:
        result = "✅ <span style='color:green; font-weight:bold'>No Infarction</

    return result, fig

# ------------------------
# 5. Gradio UI
# ------------------------
inputs = [
    gr.Number(label="❤️ Heart Rate"),
    gr.Number(label="💓 HR Variability"),
    gr.Number(label="🫁 SpO2"),
    gr.Number(label="🌬️ Respiratory Rate"),
    gr.Number(label="🩸 Blood Pressure"),
    gr.Number(label="📈 Acceleration"),
    gr.Number(label="🌡️ Skin Temp"),
    gr.Number(label="📊 ECG Signal Type (0/1)"),
    gr.Number(label="🎂 Age"),
    gr.Number(label="😰 Symptom Score"),
]
```

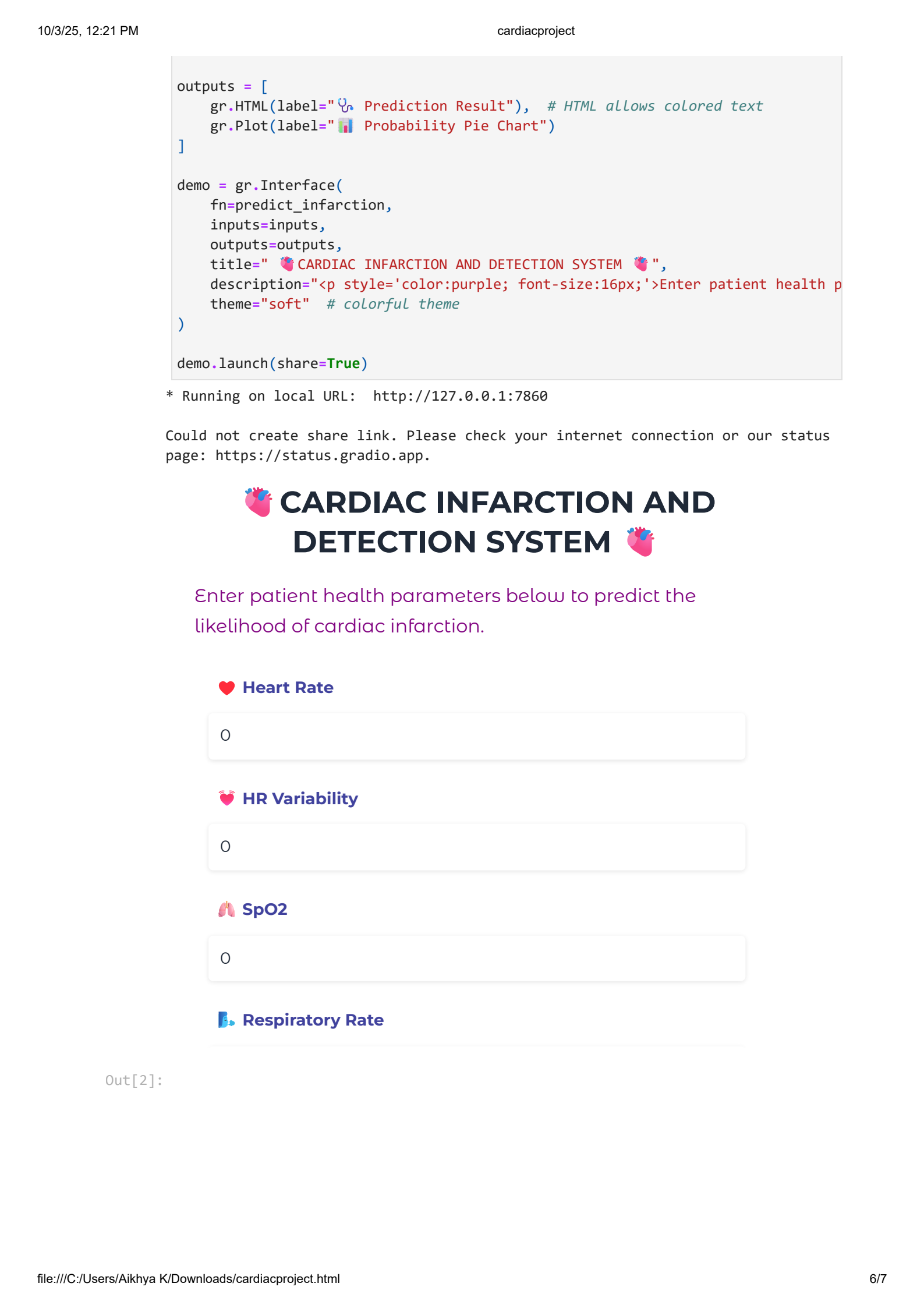
```
outputs = [
    gr.HTML(label="🩺 Prediction Result"),  # HTML allows colored text
    gr.Plot(label="📊 Probability Pie Chart")
]

demo = gr.Interface(
    fn=predict_infarction,
    inputs=inputs,
    outputs=outputs,
    title="  🫀CARDIAC INFARCTION AND DETECTION SYSTEM 🫀",
    description="<p style='color:purple; font-size:16px;'>Enter patient health p
    theme="soft"  # colorful theme
)

demo.launch(share=True)
```

```
* Running on local URL:  http://127.0.0.1:7860

Could not create share link. Please check your internet connection or our status
page: https://status.gradio.app.
```



Out[2]:

```
D:\ProgramData\anaconda3\Lib\site-packages\sklearn\utils\validation.py:2739: User
Warning: X does not have valid feature names, but RandomForestClassifier was fitt
ed with feature names
  warnings.warn(
D:\ProgramData\anaconda3\Lib\site-packages\sklearn\utils\validation.py:2739: User
Warning: X does not have valid feature names, but RandomForestClassifier was fitt
ed with feature names
  warnings.warn(
C:\Users\Aikhya K\AppData\Roaming\Python\Python313\site-packages\gradio\processin
g_utils.py:81: UserWarning: Glyph 9989 (\N{WHITE HEAVY CHECK MARK}) missing from
font(s) DejaVu Sans.
  plt.savefig(output_bytes, format=fmt)
C:\Users\Aikhya K\AppData\Roaming\Python\Python313\site-packages\gradio\processin
g_utils.py:81: UserWarning: Glyph 128680 (\N{POLICE CARS REVOLVING LIGHT}) missin
g from font(s) DejaVu Sans.
  plt.savefig(output_bytes, format=fmt)
```

In [ ]: