Deployment of Data Model on Flask

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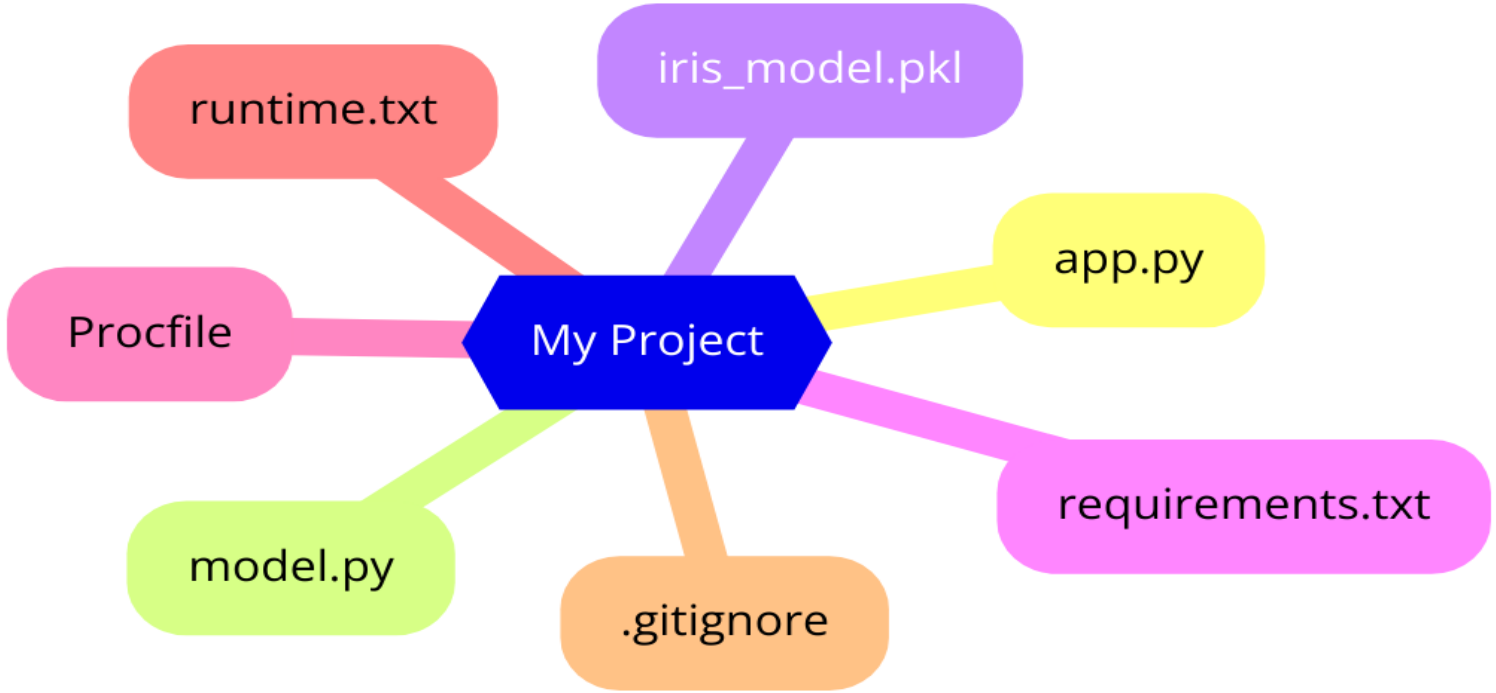
1. Deploying a Machine Learning App on Heroku

What is Heroku?

Heroku is a Platform-as-a-Service (PaaS) that enables developers to build, run, and operate applications entirely in the cloud. It simplifies the deployment process by managing the underlying infrastructure, allowing developers to focus on code rather than server maintenance.

Overview of the deployment process for a Python Flask application.



2. Preparing the Application for Deployment

File Structure:

- app.py: Main application file containing the Flask app.
- model.py: Contains the code for the machine learning model.
- iris_model.pkl: Serialized model file.

```python
from flask import Flask, request, jsonify
import joblib
import numpy as np

app = Flask(__name__)
model = joblib.load('iris_model.pkl')

@app.route('/predict', methods=['POST'])
def predict():
    data = request.json
    prediction = model.predict(np.array(data['features']).reshape(1, -1))
    return jsonify({'prediction': prediction.tolist()})

if __name__ == '__main__':
    app.run(debug=True)
```

3. Configuration Files for Heroku

Content:

- Procfile: Specifies the commands to be executed by the app on startup

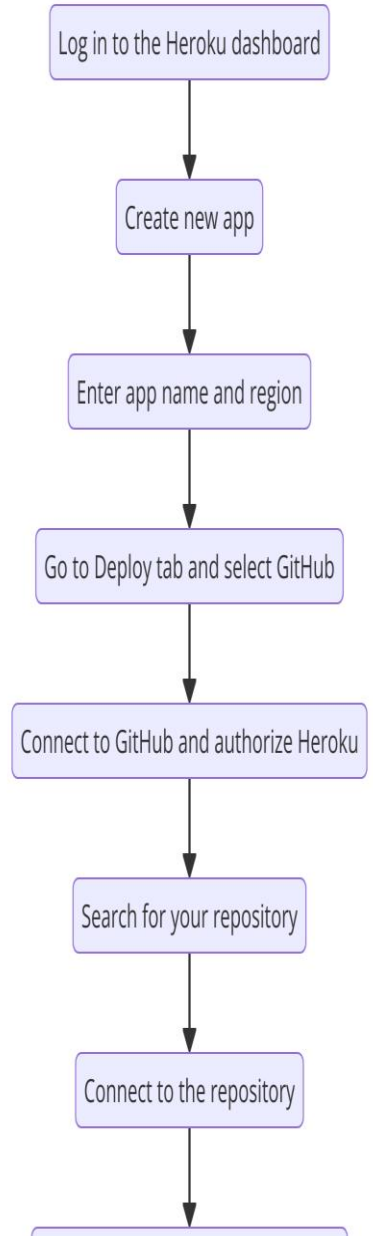
```
buildpacks:clear
buildpacks:add --index heroku/python
web: gunicorn app:app
```

- requirements.txt: Lists all the dependencies required by the app

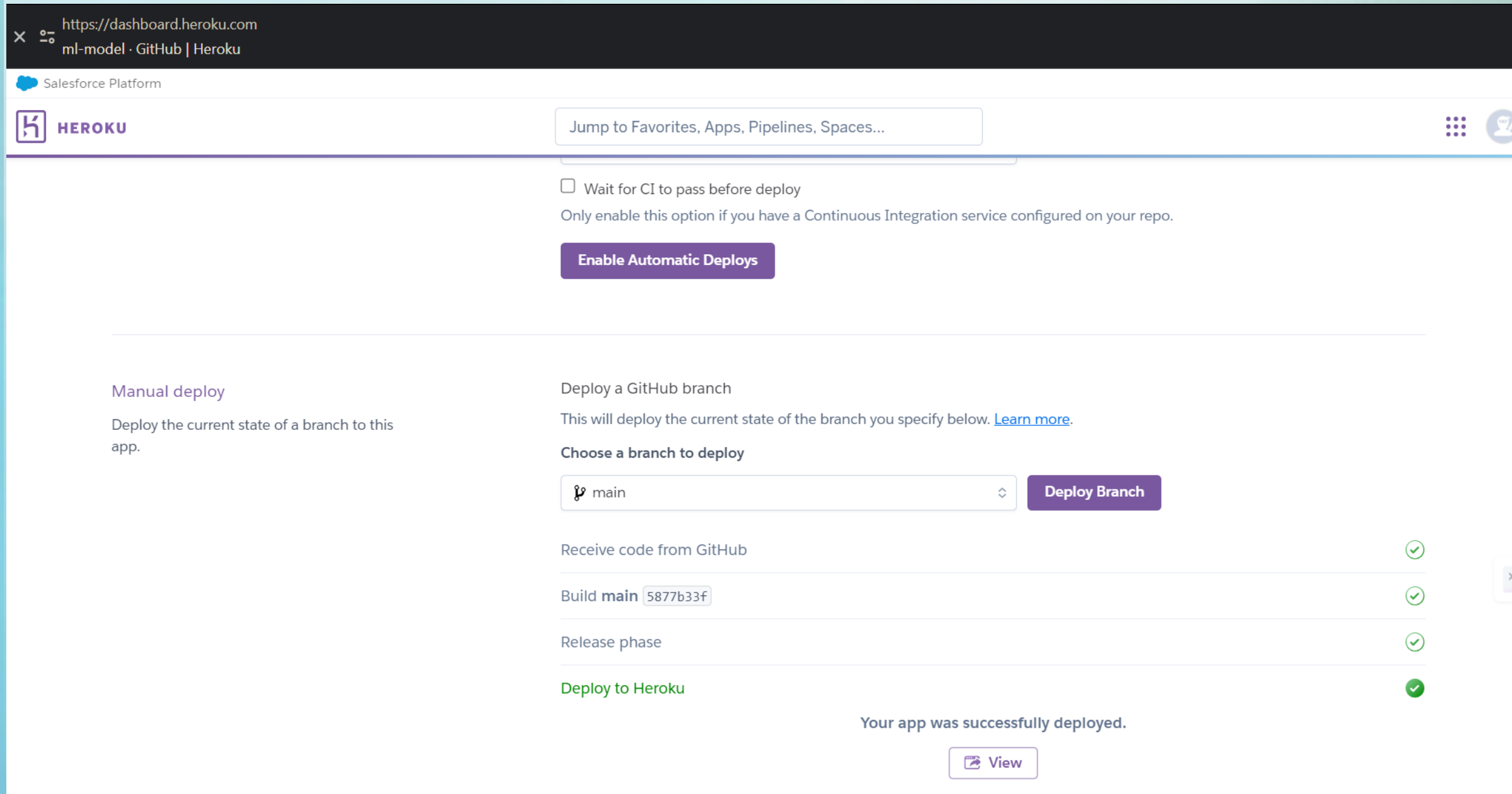
```
click==8.1.3
colorama==0.4.6
Flask==2.2.3
itsdangerous==2.1.2
Jinja2==3.1.2
joblib==1.2.0
MarkupSafe==2.1.2
numpy==1.24.2
scikit-learn==1.2.2
scipy==1.10.1
threadpoolctl==3.1.0
Werkzeug==2.2.3
```

4. Steps to Deploy to Heroku

- Create a New Heroku App:
- Log in to the Heroku dashboard at Heroku Dashboard.
- Click on the "New" button and select "Create new app.
- "Enter a name for your app and choose your region.
- Click "Create app."Connect to GitHub:
- In your app dashboard, go to the "Deploy" tab.
- In the "Deployment method" section, select "GitHub.
- "Click "Connect to GitHub" and authorize Heroku to access your GitHub account.
- Search for your repository and click "Connect.
- "Enable Automatic Deploys:Optionally, you can enable automatic deploys by selecting the branch you want to deploy from.
- (e.g., master or main) and clicking "Enable Automatic Deploys.
- "This will automatically deploy your app every time you push to the specified branch.



5.Deployment Visualization



5.Output Visualization