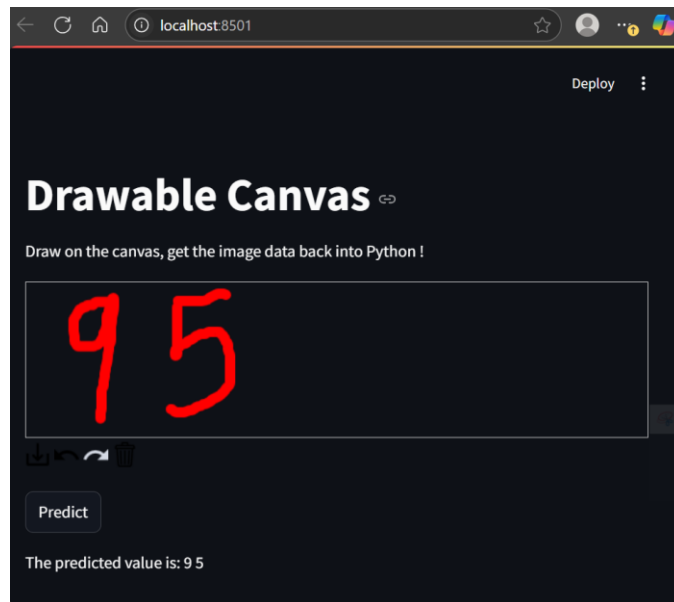# Hackathon Instructions: Hand drawn Multi Digits Recognition

Objective

The goal of this hackathon is to use neural networks and computer vision to predict hand drawn digits. This means you have to create a drawing canvas to draw digits and identify/predict what are the digits drawn.

Dataset

You'll be using the MNIST **digits Dataset** from keras library. The dataset contains **hand written digits images**:

- MNIST is a collection of handwritten digits ranging from the number 0 to 9.
- It has a training set of 60,000 images, and 10,000 test images that are classified into corresponding categories or labels.
- To use the MNIST dataset in Keras, an API is provided to download and extract images and labels automatically (refer below statements).

```
from keras.datasets import mnist
mnist.load_data()
```

Step-by-Step Instructions

- Data Loading, Manipulation
    - Import Libraries, Load Data, Conversion of data suitable for image etc.
- Model Building, Evaluation
    - Train-Test Split, Model Creation, Model Training and Prediction

- Interpret Results
  - Summarize your findings, model performance, and key insights into a report, and save the model for using them in UI
- User Interface UI Development
  - Create a Web App User Interface with the saved model using Streamlit library
- Deploy WebApp using GCP or Streamlit
  - Create a new repository in your personal github account and push the required files (python files, Docker files, Requirements file, model file, etc.) and deploy them using GCP or Streamlit for public use and share the respective URL links.
- PowerPoint Presentation
  - Prepare a PowerPoint presentation having all the steps performed along with summarizing the problem, approach, findings, recommendations and deployed links.
- Recorded Demo
  - Record a brief demo (5 minutes) walking through your code, explaining your methodology, and showcasing results.

Deliverables

Files: Submit all the Python code files, Docker files, Requirements files, Jupyter Notebook, Links of deployed WebApp(UI) link.

PowerPoint Presentation: Prepare a PowerPoint presentation having all the steps performed along with summarizing the problem, approach, findings, recommendations and deployed links, also convert them to a .pdf file as well

Recorded Demo: Record a brief demo (5 minutes) walking through your code, explaining your methodology, and showcasing results.

Additional Notes

Documentation: Ensure your python code is well-documented with comments explaining each step.

Submission: Push all the deliverables in your github and share us your github link by submit in this Google Form here

Good luck! We look forward to seeing your innovative solutions and insights. Remember, this hackathon is not just about reaching the answer, but also about experimenting and learning along the way. Happy coding!