AI Engineer Practical Interview Task – Skin Image Classification

Objective

Build a Convolutional Neural Network (CNN) that classifies skin condition images into 3 categories: 'eczema', 'psoriasis', and 'acne'. This task reflects the real-world image analysis challenges we tackle at ToksNet.

Instructions

- Open the attached Colab notebook: AI_Engineer_CNN_Skin_Image_Assessment.ipynb
- Prepare an image dataset folder in the following structure:

```
skin_images_dataset/
  eczema/
    img1.jpg
    img2.jpg
  psoriasis/
    img1.jpg
    img2.jpg
  acne/
    img1.jpg
    img2.jpg
```

- Use publicly available sample images or dummy data to simulate the structure.
- Upload this folder to your Google Drive and mount it in Colab, or upload it directly to Colab's file system.
- Inside the notebook, complete the following:
  - Load and preprocess the image dataset
  - Build a CNN using TensorFlow or PyTorch
  - Train and evaluate the model
  - Visualize results with a confusion matrix
  - Interpret the model's performance and suggest improvements

Bonus (Optional but highly valued)

- Suggest how the model could be deployed to a mobile health app (e.g., TensorFlow Lite).
- Discuss potential ethical issues with AI-based medical diagnosis.
- Propose strategies to improve accuracy, such as data augmentation or transfer learning.

Submission Guidelines

- Save your completed notebook as a .ipynb file.
- Submit your work via one of the following methods:
  - GitHub repository (preferred)
  - Google Drive share link
  - Direct Google Colab share link

Deadline

Please submit your completed assessment within 48–72 hours of receiving this instruction.