### **Prototype Assignment 1: Historical Image Animation**

Project Title: TimeCapsule AI: Reviving Historical Figures Through AI  
Assignment Type: Practical Prototype

Objective:

In this assignment, you will begin building the foundation of your AI-based historical figure revival system. The goal is to take a real historical figure’s photo and prepare it for AI-based animation using image preprocessing, facial landmark detection, and motion transfer via a pretrained deep learning model.

This assignment is divided into three parts:

### **Part 1 – Image Collection and Preprocessing**

Tasks:

* Collect at least 5 frontal-face images of well-known historical figures (preferably our national heroes e.g., Quaid-e-Azam, Allama Iqbal, etc.).
* The image must have:
  + Clear facial features
  + Neutral expression (preferred)
  + No obstructions (glasses, hats, etc.)
* Resize the images to 256x256 pixels.
* Convert images to grayscale or enhance brightness/contrast for better processing.
* Save the final preprocessed images with proper names (e.g., lincoln\_preprocessed.jpg).

Tools Recommended:  
Python, OpenCV, PIL (Python Imaging Library)

### **Part 2 – Facial Landmark Detection**

Tasks:

* Use any pre-trained model (e.g., dlib or MediaPipe) to detect facial landmarks from the historical images.
* Identify and visualize key facial regions:
  + Eyes
  + Nose
  + Mouth
  + Jawline
* Display or save an image with the landmarks overlaid.

Tools Recommended:  
Python, dlib, MediaPipe, OpenCV

### **Part 3 – Static Image Animation Using First Order Motion Model**

Tasks:

* Use the First Order Motion Model (FOMM) or any other tool/model to animate your preprocessed historical face images.
* Use a sample driving video (can be taken from the model's GitHub demo) to drive the animation.
* Generate a short video (5–10 seconds) showing the historical image animated with facial movement.
* Submit the output video along with a screenshot and a short note (2–3 lines) on how FOMM works.

Tools & Resources:

* Python, Google Colab
* [First Order Motion Model GitHub Repo](https://github.com/AliaksandrSiarohin/first-order-model)
* Sample driving videos from the repo or any standard human face video.

### **Submission Requirements:**

* A folder named Prototype\_Assignment\_GroupID containing:
  + /images/ folder with original and preprocessed images
  + /landmarks/ folder with landmark images and detection code
  + /animation/ folder with video output and FOMM code
  + A brief PDF report (max 2 pages) with:
    - Introduction
    - Tools used
    - Screenshots
    - Output explanation (for each part)