**ALGORITHM IMPLEMENTATION:**

* **Start/Initialization:**
  + This step marks the beginning of the project.
  + It involves initializing all the necessary components and systems required for depression detection.
* **Capture User's Live Video & Preprocess Video Frames:**
  + In this step, the system captures live video from the user's webcam.
  + The captured video frames are preprocessed to enhance the quality and reduce noise.
* **Facial Analysis (Facial Landmarks & Expressions):**
  + The preprocessed video frames undergo facial analysis.
  + Facial landmarks are detected, which are specific points on the face (e.g., eyes, mouth) used for analysis.
  + Facial expressions are also analyzed to identify signs of depression (e.g., sadness, lack of expression).
* **Engage User through Chatbot Interface:**
  + The system engages the user through a chatbot interface.
  + This involves initiating a natural language conversation with the user to assess their emotional state and gather information.
* **Collect & Preprocess User's Text Responses:**
  + User's text responses in the chat conversation are collected.
  + These responses are preprocessed to remove noise and irrelevant information.
* **Prepare Depression Dataset from Twitter Tweets:**
  + Depression-related tweets are collected from Twitter.
  + The tweet data is preprocessed to extract relevant features (e.g., sentiment, keywords) for training the model.
* **Train Deep Learning & Machine Learning Models on Dataset:**
  + The prepared depression dataset is used to train various machine learning models.
  + These models may include Support Vector Machines (SVM), Decision Trees, Neural Networks, etc.
  + The models learn to recognize patterns indicative of depression in the text data.
* **Test and Evaluate Model Performance Metrics:**
  + The trained models are tested using a separate dataset.
  + Performance metrics (e.g., accuracy, precision, recall) are computed to assess how well the models can detect depression.
* **Compare and Select the Best Model:**
  + The results of each model's performance are compared.
  + The model with the highest accuracy and the best overall performance is selected for further use.
* **Implement Real-time Depression Detection using Webcam Data:**
  + The selected model is integrated into the live system.
  + Real-time depression detection is performed on user data, combining facial analysis and chatbot responses.
* **Validate Detection Results with User Testing & Data:**
  + User testing is conducted with participants.
  + Self-reported depression levels are collected from users.
  + The system's output is compared with self-reports to validate its accuracy.
* **Output Depression Level to User & Provide Recommendations:**
  + The system provides the detected depression level to the user.
  + Depending on the level detected, appropriate recommendations or support resources may be offered.
* **End:**
  + This marks the conclusion of the AI-Powered Depression Detection process.