### Feature of voting system : ✅ Core Features

1. **User Registration with Face Image Upload**
   * Users must upload a face image during registration.
   * Voter ID, EPIC No, DOB, and phone number are validated.
   * Password strength is enforced (min 12 chars, includes upper/lowercase, numbers, special char).
   * Age check (must be ≥ 18 years).
2. **Face Recognition-Based Voting**
   * Users must pass face verification using webcam before voting.
   * Face verification is done using the face\_recognition library and face-api.js.
3. **One-Time Vote Casting**
   * Each user can vote only once.
   * The system checks if the user has already voted.
4. **Party Management (Admin Panel)**
   * Admin can register new parties with logo and color.
   * Party logos and colors are shown on the user dashboard.
5. **Live Voting Result with Chart.js**
   * Votes are counted in real-time and shown as a bar chart with party logos.

**🔐 Security & Data Integrity Features**

1. **Duplicate Face Image Detection**
   * A user **cannot register again using the same face** (even with different details).
   * System compares new uploaded face image with existing ones.
2. **Duplicate User Detail Check**
   * Prevents registration if voter ID, EPIC number, or phone number already exists.
3. **Face Image Storage**
   * Face images are saved in static/face\_data/ with filenames like user\_<user\_id>.jpg.

**⚙️ Admin Utility Features**

1. **System Reset Endpoint (/reset\_all)**
   * Deletes all users (except Admin), votes, and parties.
   * Clears face images from face\_data/.
   * Resets AUTO\_INCREMENT values.
   * Re-inserts Admin manually with fixed ID (e.g., 1000).
2. **ID Resetting**

* After reset, new users start from ID = 1.

**🚫 User Restrictions**

1. **Voting Access Control Based on Party Availability**

* If no parties are registered, users cannot access the voting camera.
* Professional message is shown instead:  
  *"Parties are not available yet. Please wait until the election is set up."*

1. **Face Not Detected Handling**

* If face not found in uploaded image during registration, show a proper error.

**🎨 User Interface Enhancements**

1. **Dark Theme Styling**

* Professionally styled dashboard for users with dark mode aesthetics.

1. **Face Verification Status Message**

* Clear messages during face recognition (e.g., "Initializing face recognition...").

1. **Disabled Vote Button Until Face is Verified**

* Users cannot vote until face match is confirmed.