**PROJECT**

**CampusConnect: Smart QR-Based Event & Campus Ecosystem Portal**

**Objectives:**

1. Provide an online event registration and ticketing platform with QR-based entry validation.
2. Enable clubs and departments to manage and promote their events and resources.
3. Create a centralized hub with study materials, placement updates, and company information.
4. Include hackathon & opportunity sections for student growth.
5. Implement ML modules for recommendations, fraud detection, and crowd prediction.

**Deliverables:**

1. **User Registration & Authentication**
   * Secure login/signup using JWT.
   * Role-based access for students, clubs, and admins.
2. **Event Management & QR Ticketing**
   * Event creation module for clubs and faculty.
   * Online registration with integrated payment gateway.
   * QR-code generation for ticket validation.
   * QR scanning at entry gates for fraud prevention.
3. **Academic & Placement Hub**
   * Repository for PYQs, study material, and training resources.
   * Placement updates and company information.
4. **Hackathons & Opportunities**
   * Section dedicated to internal/external hackathons.
   * Notifications for upcoming opportunities.
5. **Dashboards**
   * Student dashboard for registrations and resources.
   * Admin dashboard for event tracking and analytics.
6. **Machine Learning Features**
   * Recommendation engine for personalized event/learning suggestions.
   * Fraud detection for duplicate or invalid tickets.
   * Crowd prediction for event management.

**Requirements:**

* **Hardware**
  + Laptop/PC with minimum 8GB RAM, 256GB storage.
  + Smartphone for QR scanning.
* **Software**
  + **Frontend**: React.js, Tailwind CSS / Material UI
  + **Backend**: Node.js, Express.js
  + **Database**: MongoDB Atlas
  + **Authentication**: JWT-based system
  + **Payment Gateway**: Razorpay / Stripe / Paytm
  + **QR Code**: qrcode (npm), react-qr-reader
  + **ML Models**: Python (Flask/FastAPI) or TensorFlow.js
  + **Notifications**: NodeMailer, Firebase Messaging

**Advanced Features:**

1. **Face Recognition + QR** for enhanced entry security.
2. **Advanced Analytics Dashboards** for clubs and faculty.
3. **Integration with Third-Party APIs** to fetch global hackathon data.
4. **Mobile App Version** of CampusConnect for easy access.
5. **Gamification** with rewards and leaderboards to improve student engagement.