**1. Home Page (Landing Page)**

* **Purpose**: Introduce the app and guide users seamlessly into the MRI classification process.
* **Design Elements**:
  + **Header**: Clean navigation bar with links: *Home, Upload MRI, Patient Data, About, Contact*.
  + **Hero Section**:
    - A compelling headline like "AI-Driven Brain Tumor Detection."
    - A brief description of how the tool assists radiologists and neurosurgeons.
    - **Call-to-Action Buttons**:
      * "Get Started" directs to the Upload MRI page.
      * "Learn More" scrolls down to the **How It Works** section.
  + **Features Section**:
    - Highlight key features like AI-powered classification, real-time segmentation, and secure patient data management.
  + **Testimonial/Success Stories**: Quotes or stories from medical professionals who have used the tool.
  + **Footer**: Links to privacy policy, terms, and support.

**2. Upload MRI Page**

* **Purpose**: Streamline the process of uploading MRI scans for analysis.
* **Design Elements**:
  + **Upload Section**:
    - A drag-and-drop box or "Browse" button to upload MRI scans (supporting DICOM, PNG, JPG).
    - Option to upload multiple scans at once.
    - **Progress Bar**: Indicates the status of the upload.
  + **Patient Info Form**: Collect optional information like Patient ID, Age, Medical History (can be autofilled for returning users).
  + **Preprocessing Visualization**:
    - As the scan is uploaded, visualize preprocessing steps (skull stripping, noise reduction) using **OpenCV**.
    - Include interactive visual cues (e.g., show how the image changes after preprocessing).
  + **Start Analysis Button**: Once the MRI is uploaded, this button initiates the classification and segmentation.
  + **Notification**: Inform users that the processing might take a few minutes.

**3. Classification Results Page**

* **Purpose**: Display the tumor classification and segmentation results clearly.
* **Design Elements**:
  + **Tumor Segmentation Viewer**:
    - Use **TensorFlow.js** to provide an interactive viewer, allowing users to explore MRI slices with tumor segmentation overlays.
    - A slider for adjusting the image layers and toggling the tumor area.
  + **Tumor Type Classification**:
    - Show the predicted tumor type (e.g., glioma, meningioma) with confidence scores next to each type.
    - **AI Explanation**: Include an explanation panel (using SHAP or GradCAM) to show which regions contributed to the model's decision.
  + **Patient Report**:
    - A button to generate a PDF report with tumor details, including size, location, and classification.
  + **Additional Actions**:
    - "Compare with Previous Scans" (if patient history exists).
    - "Consult Specialist" button to share results with a medical professional.
  + **Download Options**: Download MRI scan with segmentation overlay or raw scan.

**4. Patient Data Management Page (for Doctors)**

* **Purpose**: Provide doctors with full control over patient records and MRI analysis history.
* **Design Elements**:
  + **Patient Dashboard**:
    - A list of all patients with search and filter options (by name, ID, tumor type).
    - Include a quick summary next to each patient: Last MRI date, Tumor Type, and Status (diagnosed, treatment started, etc.).
  + **Detailed Patient View**:
    - Clicking on a patient brings up their history, including a timeline of their MRI scans, previous diagnoses, and treatment outcomes.
    - **MRI Scan Viewer**: Embed the MRI scan and allow doctors to switch between raw images and tumor-segmented versions.
  + **Add New Patient**: A form to input new patient information, upload initial MRI scans, and link them to future scans.
  + **Treatment Planning Section**: Allow doctors to add notes about treatment plans or suggestions based on MRI scan results.

**5. MRI Scan Viewer Page**

* **Purpose**: Offer a fully interactive environment for analyzing MRI scans.
* **Design Elements**:
  + **Interactive Image Viewer**:
    - Provide tools for zooming, rotating, and adjusting the brightness/contrast of MRI scans.
    - **Tumor Overlay**: Toggle the tumor segmentation layer on and off to visually compare with the raw scan.
    - Allow users to scroll through MRI slices (for 3D scans) or view specific planes (axial, coronal, sagittal).
  + **Segmentation Masks**: Highlight tumor areas with color overlays and allow for manual adjustments (useful for radiologists reviewing the results).

**6. Real-Time Tumor Classification (Optional)**

* **Purpose**: Offer quick, real-time scanning and classification.
* **Design Elements**:
  + **Webcam or Upload**: Allow users to capture scans live or upload pre-scanned images for quick classification.
  + **Instant Results**: Display quick results with tumor type prediction, confidence score, and estimated size.
  + **Link to Full Results**: After the quick classification, give the option to view full details (like segmentation and reports) in the Results Page.

**7. About Page**

* **Purpose**: Explain the project’s goals, technology stack, and team.
* **Design Elements**:
  + **Project Overview**: A brief description of how the app helps in brain tumor classification and what sets it apart from other tools.
  + **Technology Stack**:
    - Highlight the use of **CNNs**, **U-Net**, **DenseNet**, **OpenCV** for preprocessing, and **TensorFlow.js** for visualization.
    - Explain the use of **Node.js** for managing patient data securely.
  + **Team Introduction**: Brief bios and photos of team members.
  + **FAQ Section**: Answer common questions about accuracy, data security, and how results should be interpreted by medical professionals.
  + **Legal Disclaimer**: A clear statement that the tool is a support system and not a substitute for professional medical advice.

**Additional Features:**

1. **Authentication and User Roles**:
   * Secure login system using JWT (JSON Web Token) for doctors and admins.
   * Different access levels for regular users (patients), doctors, and admin roles.