ImageMedix API Documentation

Version: 1.0.0
Last Updated: May 5, 2025

Introduction

The ImageMedix API provides a comprehensive set of endpoints for integrating with our medical image analysis platform. This API enables healthcare applications to upload, analyze, and manage medical scans with a focus on brain tumor and pneumonia detection.

Authentication

OAuth 2.0

ImageMedix API uses OAuth 2.0 for authentication. Access tokens are required for all authenticated endpoints.

Authorization: Bearer {token}

Authentication Endpoints

Login

POST /api/auth/login

Request Body:

```
{
  "email": "user@example.com",
  "password": "password123"
}
```

Response:

```
{
  "user": {
    "_id": "67f46037df638f437b934206",
    "name": "Vikram Desai",
    "email": "user@example.com",
    "role": "doctor"
  },
  "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9..."
}
```

Google OAuth Login

GET /api/auth/google

Redirects to Google for authentication.

GET /api/auth/google/callback

Handles the OAuth callback and redirects to the client application with a token.

Get Current User

GET /api/auth/me

Response:

```
{
  "_id": "67f46037df638f437b934206",
  "name": "Vikram Desai",
  "email": "user@example.com",
  "role": "doctor",
  "specialization": "Neurology"
}
```

Scans

Endpoints

Upload Scan

POST /api/scans

Content-Type: multipart/form-data

Form Fields:

- image: The scan image file (image/jpeg, image/png, or application/dicom)
- patientId: Patient's unique identifier
- patientName: Patient's name
- scanDate (optional): Date when the scan was taken (ISO format)

Response:

```
{
  "_id": "67f460abdf638f437b934239",
  "patientId": "PT-20250505-001",
  "patientName": "Priya Mehta",
  "scanDate": "2025-05-01T15:30:00.000Z",
  "imageUrl": "https://api.imagemedix.com/uploads/1744068779585-
Brain_tumor_MRI.png",
  "status": "processing"
}
```

Get All Scans

```
GET /api/scans
```

Query Parameters:

- `page` (optional): Page number for pagination (default: 1)
- `limit` (optional): Number of results per page (default: 10)
- `status` (optional): Filter by status (pending, processing, completed, failed)
- `patientId` (optional): Filter by patient ID
- `startDate` (optional): Filter by scan date range start (ISO format)
- `endDate` (optional): Filter by scan date range end (ISO format)

Response:

```json
{
  "scans": [
    {
      "_id": "67f460abdf638f437b934239",
      "patientId": "PT-20250505-001",
      "patientName": "Priya Mehta",
      "scanDate": "2025-05-01T15:30:00.000Z",
      "imageUrl": "https://api.imagemedix.com/uploads/1744068779585-Brain_tumor_MRI.png",
      "status": "completed",
      "result": {
        "hasTumor": true,
        "confidence": 0.95,
        "tumorType": "glioma"
      }
    }
  ],
  "currentPage": 1,
  "totalPages": 5,
  "totalScans": 42
}
```

Get Scan by ID

```
GET /api/scans/:id
```

Path Parameters:

- `id`: Scan ID

Response:

```json
{
  "_id": "67f460abdf638f437b934239",
  "patientId": "PT-20250505-001",
  "patientName": "Priya Mehta",
  "scanDate": "2025-05-01T15:30:00.000Z",
  "imageUrl": "https://api.imagemedix.com/uploads/1744068779585-Brain_tumor_MRI.png",
```

```
  "status": "completed",
  "doctorId": {
    "_id": "67f46037df638f437b934206",
    "name": "Dr. Vikram Desai",
    "email": "vikram.desai@hospital.com"
  },
  "result": {
    "hasTumor": true,
    "confidence": 0.95,
    "tumorType": "glioma",
    "tumorLocation": "frontal lobe",
    "additionalNotes": "Tumor appears to be well-defined with minimal surrounding
edema."
  },
  "annotations": [
    {
      "x": 120,
      "y": 85,
      "text": "Tumor boundary",
      "createdAt": "2025-05-02T10:15:00.000Z"
    }
  ]
}
```

Get Scan Analysis Status

GET /api/scans/:id/status

Path Parameters:

- id: Scan ID

Response:

```
{
  "status": "processing",
  "jobStatus": {
    "state": "active",
    "progress": 45
  }
}
```

Update Scan

PATCH /api/scans/:id

Path Parameters:

- id: Scan ID

Request Body:

```
{
  "status": "completed",
  "result": {
```

```
      "hasTumor": true,
      "confidence": 0.92,
      "tumorType": "meningioma",
      "additionalNotes": "Findings suggest further investigation is required."
  }
}
```

Response:

```
{
  "_id": "67f460abdf638f437b934239",
  "patientId": "PT-20250505-001",
  "status": "completed",
  "result": {
    "hasTumor": true,
    "confidence": 0.92,
    "tumorType": "meningioma",
    "additionalNotes": "Findings suggest further investigation is required."
  }
}
```

Add Annotation to Scan

POST /api/scans/:id/annotations

Path Parameters:

- id: Scan ID

Request Body:

```
{
  "x": 150,
  "y": 200,
  "text": "Possible secondary lesion"
}
```

Response:

```
{
  "_id": "67f460abdf638f437b934239",
  "annotations": [
    {
      "x": 150,
      "y": 200,
      "text": "Possible secondary lesion",
      "createdAt": "2025-05-05T14:22:31.456Z"
    }
  ]
}
```

Generate Report

POST /api/scans/:id/report
```

**Path Parameters:**

- `id`: Scan ID

**Response:**

```json
{
  "message": "Report generated successfully",
  "reportUrl": "/reports/report-67f460abdf638f437b934239.pdf"
}
```

Delete Scan (Admin only)

```
DELETE /api/scans/:id
```

Path Parameters:

- `id`: Scan ID

Response:

```json
{
  "message": "Scan deleted successfully"
}
```

Patients

Endpoints

Get All Patients

```
GET /api/patients
```

Query Parameters:

- `page` (optional): Page number for pagination (default: 1)
- `limit` (optional): Number of results per page (default: 10)
- `status` (optional): Filter by status (active, inactive, archived)
- `search` (optional): Search by name or ID

Response:

```json
{
  "patients": [
    {
      "_id": "67e46037df638f437b934205",
      "patientId": "PT-20250505-001",
      "name": "Priya Mehta",
      "dateOfBirth": "1980-05-15T00:00:00.000Z",
      "gender": "female",
      "status": "active",
```

```
      "assignedDoctors": [
        {
          "_id": "67f46037df638f437b934206",
          "name": "Dr. Vikram Desai"
        }
      ]
    }
  ],
  "currentPage": 1,
  "totalPages": 3,
  "totalPatients": 25
}
```

Get Patient by ID

GET /api/patients/:id

Path Parameters:

- id: Patient ID

Response:

```
{
  "_id": "67e46037df638f437b934205",
  "patientId": "PT-20250505-001",
  "name": "Priya Mehta",
  "dateOfBirth": "1980-05-15T00:00:00.000Z",
  "gender": "female",
  "contact": {
    "email": "priya.mehta@example.com",
    "phone": "555-123-4567",
    "address": "123 Main St, Mumbai"
  },
  "status": "active",
  "medicalHistory": [
    {
      "condition": "Hypertension",
      "diagnosis": "Essential (primary) hypertension",
      "treatment": "Lisinopril 10mg daily",
      "date": "2024-03-15T00:00:00.000Z"
    }
  ],
  "scans": [
    {
      "_id": "67f460abdf638f437b934239",
      "scanDate": "2025-05-01T15:30:00.000Z",
      "status": "completed"
    }
  ],
  "notes": [
    {
      "content": "Patient reports occasional headaches",
      "createdBy": {
        "_id": "67f46037df638f437b934206",
        "name": "Dr. Vikram Desai"
      },
```

```
      "createdAt": "2025-04-25T09:30:00.000Z"
    }
  ],
  "lastVisit": "2025-04-25T09:30:00.000Z",
  "nextAppointment": "2025-06-10T14:00:00.000Z"
}
```

Create Patient

POST /api/patients

Request Body:

```
{
  "patientId": "PT-20250505-002",
  "name": "Raj Sharma",
  "dateOfBirth": "1992-08-22",
  "gender": "male",
  "contact": {
    "email": "raj.sharma@example.com",
    "phone": "555-987-6543"
  }
}
```

Response:

```
{
  "_id": "67e46037df638f437b934212",
  "patientId": "PT-20250505-002",
  "name": "Raj Sharma",
  "dateOfBirth": "1992-08-22T00:00:00.000Z",
  "gender": "male",
  "contact": {
    "email": "raj.sharma@example.com",
    "phone": "555-987-6543"
  },
  "status": "active",
  "assignedDoctors": [
    "67f46037df638f437b934206"
  ],
  "medicalHistory": [],
  "scans": [],
  "notes": []
}
```

Update Patient

PATCH /api/patients/:id

Path Parameters:

- id: Patient ID

Request Body:

```json
{
  "contact": {
    "phone": "555-111-2222",
    "address": "456 Oak Ave, Delhi"
  },
  "status": "active"
}
```

Response:

```json
{
  "_id": "67e46037df638f437b934205",
  "patientId": "PT-20250505-001",
  "name": "Priya Mehta",
  "contact": {
    "email": "priya.mehta@example.com",
    "phone": "555-111-2222",
    "address": "456 Oak Ave, Delhi"
  },
  "status": "active"
}
```

Add Medical History Entry

POST /api/patients/:id/medical-history

Path Parameters:

* id: Patient ID

Request Body:

```json
{
  "condition": "Migraine",
  "diagnosis": "Migraine without aura",
  "treatment": "Sumatriptan as needed"
}
```

Response:

```json
{
  "_id": "67e46037df638f437b934205",
  "medicalHistory": [
    {
      "condition": "Hypertension",
      "diagnosis": "Essential (primary) hypertension",
      "treatment": "Lisinopril 10mg daily",
      "date": "2024-03-15T00:00:00.000Z"
    },
    {
      "condition": "Migraine",
      "diagnosis": "Migraine without aura",
      "treatment": "Sumatriptan as needed",
      "date": "2025-05-05T14:30:00.000Z"
    }
  ]
}
```

```
}
```

Add Note to Patient

POST /api/patients/:id/notes

Path Parameters:

- id: Patient ID

Request Body:

```
{
  "content": "Patient reports improved symptom control with current medication regimen."
}
```

Response:

```
{
  "_id": "67e46037df638f437b934205",
  "notes": [
    {
      "content": "Patient reports occasional headaches",
      "createdBy": "67f46037df638f437b934206",
      "createdAt": "2025-04-25T09:30:00.000Z"
    },
    {
      "content": "Patient reports improved symptom control with current medication regimen.",
      "createdBy": "67f46037df638f437b934206",
      "createdAt": "2025-05-05T14:35:22.789Z"
    }
  ]
}
```

Assign Doctor to Patient (Admin only)

POST /api/patients/:id/assign-doctor

Path Parameters:

- id: Patient ID

Request Body:

```
{
  "doctorId": "67f46037df638f437b934215"
}
```

Response:

```
{
  "_id": "67e46037df638f437b934205",
```

```
  "assignedDoctors": [
    "67f46037df638f437b934206",
    "67f46037df638f437b934215"
  ]
}
```

Delete Patient (Admin only)

```
DELETE /api/patients/:id
```

Path Parameters:

- `id`: Patient ID

Response:

```
{
  "message": "Patient deleted successfully"
}
```

ML Analysis

Endpoints

Analyze Brain Scan

```
POST /api/ml/brain/analyze
```

Request Body:

```
{
  "scanId": "67f460abdf638f437b934239"
}
```

Response:

```
{
  "jobId": "analysis_job_6789",
  "status": "processing"
}
```

Analyze Chest Scan

```
POST /api/ml/chest/analyze
```

Request Body:

```
{
  "scanId": "67f460abdf638f437b934240"
}
```

Response:

```
{
  "jobId": "analysis_job_6790",
  "status": "processing"
}
```

Get Analysis Status

GET /api/ml/status/:scanId

Path Parameters:

- scanId: Scan ID

Response:

```
{
  "status": "processing",
  "progress": 75,
  "estimatedCompletionTime": "30 seconds"
}
```

Users (Admin only)

Endpoints

Get All Users

GET /api/users/users

Response:

```
[
  {
    "_id": "67f46037df638f437b934206",
    "name": "Dr. Vikram Desai",
    "email": "vikram.desai@hospital.com",
    "role": "doctor",
    "specialization": "Neurology",
    "isActive": true
  },
  {
    "_id": "67f46037df638f437b934215",
    "name": "Dr. Ananya Singh",
    "email": "ananya.singh@hospital.com",
    "role": "doctor",
    "specialization": "Radiology",
    "isActive": true
  }
]
```

Update User

PATCH /api/users/users/:id

Path Parameters:

- `id`: User ID

Request Body:

```
{
  "role": "admin",
  "isActive": true,
  "specialization": "Chief Radiology"
}
```

Response:

```
{
  "_id": "67f46037df638f437b934215",
  "name": "Dr. Ananya Singh",
  "email": "ananya.singh@hospital.com",
  "role": "admin",
  "specialization": "Chief Radiology",
  "isActive": true
}
```

Error Handling

All API endpoints follow a consistent error response format:

```
{
  "error": "Error message describing the issue"
}
```

HTTP Status Codes

- `200 OK`: Request succeeded
- `201 Created`: Resource created successfully
- `400 Bad Request`: Invalid request parameters
- `401 Unauthorized`: Missing or invalid authentication
- `403 Forbidden`: Authenticated but insufficient permissions
- `404 Not Found`: Resource not found
- `500 Internal Server Error`: Server-side error

Rate Limiting

API requests are subject to rate limiting to ensure service stability:

- 100 requests per 15-minute window per IP address
- Rate limit headers are included in the response:
    - `X-RateLimit-Limit`: Maximum requests per window
    - `X-RateLimit-Remaining`: Remaining requests in current window
    - `X-RateLimit-Reset`: Time (in seconds) until window resets

Webhooks

ImageMedix supports webhooks for real-time notifications of events.

Event Types

- scan.uploaded: A new scan has been uploaded
- scan.analyzed: Scan analysis is complete
- scan.failed: Scan analysis has failed