**ImageMedix API Documentation**

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**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:**

{

"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:**

{

"\_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:**

{

"message": "Report generated successfully",

"reportUrl": "/reports/report-67f460abdf638f437b934239.pdf"

}

**Delete Scan (Admin only)**

DELETE /api/scans/:id

**Path Parameters:**

* id: Scan ID

**Response:**

{

"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:**

{

"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:**

{

"contact": {

"phone": "555-111-2222",

"address": "456 Oak Ave, Delhi"

},

"status": "active"

}

**Response:**

{

"\_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:**

{

"condition": "Migraine",

"diagnosis": "Migraine without aura",

"treatment": "Sumatriptan as needed"

}

**Response:**

{

"\_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

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