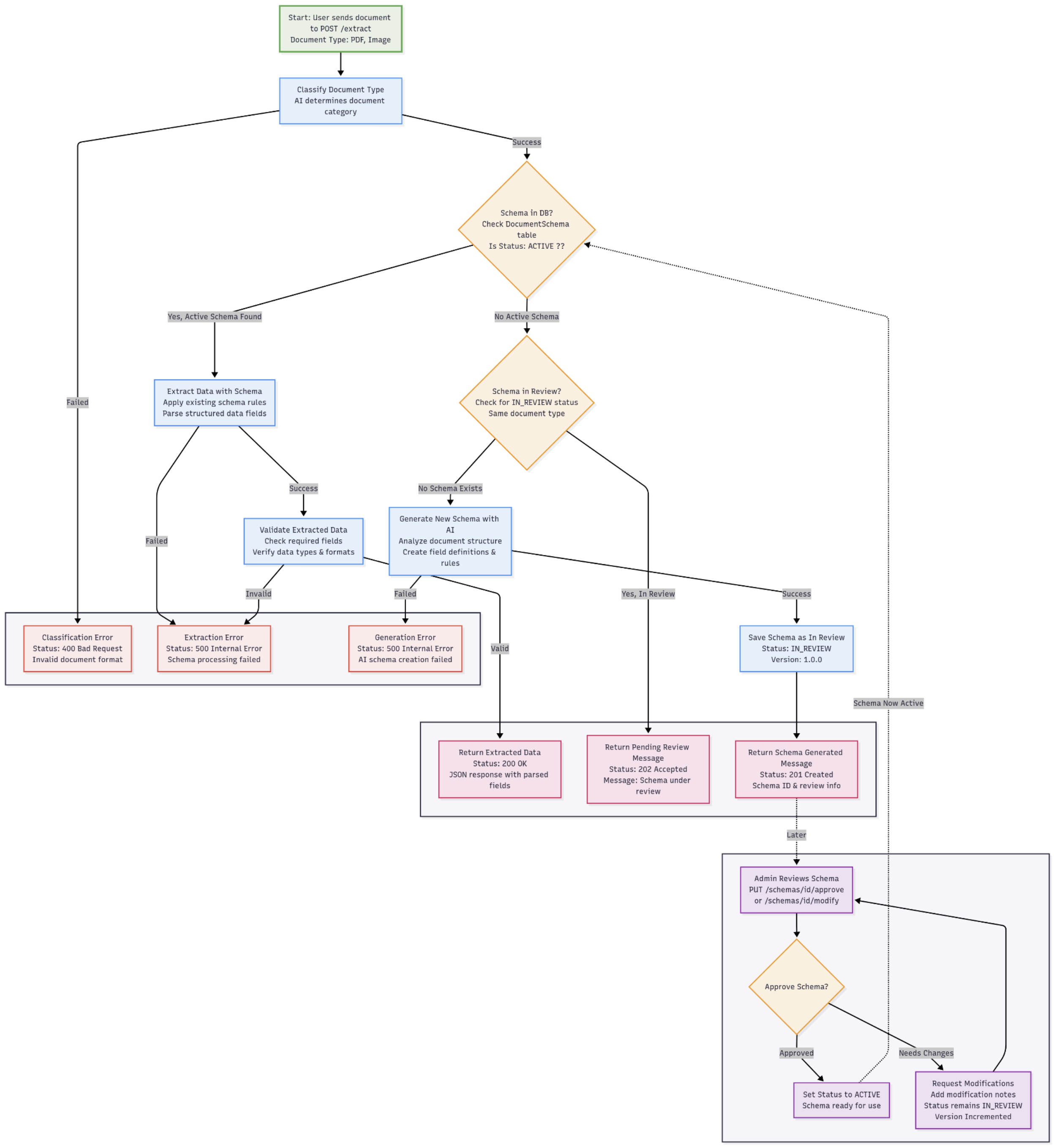
Document Extraction API

Flow Diagram



Start: User sends document to POST /extract Document Type: PDF, Image
Classify Document Type AI determines document category
Success
Failed
Schema in DB? Check DocumentSchema table Is Status: ACTIVE ??
Yes, Active Schema Found
No Active Schema
Extract Data with Schema Apply existing schema rules Parse structured data fields
Schema in Review? Check for IN_REVIEW status Same document type
Success
No Schema Exists
Failed
Validate Extracted Data Check required fields Verify data types & formats
Generate New Schema with AI Analyze document structure Create field definitions & rules
Invalid
Failed
Yes, In Review
Success
Valid
Classification Error Status: 400 Bad Request Invalid document format
Extraction Error Status: 500 Internal Error Schema processing failed
Generation Error Status: 500 Internal Error AI schema creation failed
Save Schema as In Review Status: IN_REVIEW Version: 1.0.0
Schema Now Active
Return Extracted Data Status: 200 OK JSON response with parsed fields
Return Pending Review Message Status: 202 Accepted Message: Schema under review
Return Schema Generated Message Status: 201 Created Schema ID & review info
Later
Admin Reviews Schema PUT /schemas/id/approve or /schemas/id/modify
Approve Schema?
Approved
Needs Changes
Set Status to ACTIVE Schema ready for use
Request Modifications Add modification notes Status remains IN_REVIEW Version Incremented

Health

GET /health

Purpose: Check API health status.

Request Parameters: None

Example Request:

```
curl -X GET http://localhost:8000/health
```

Example Response:

```
{
   "status": "healthy"
}
```

Status Codes:

- 200: Service is healthy

Extract

POST /extract

Request Parameters:

Name	Type	Required	Description
document	UploadFile	Yes	Multiple files supported (JPEG, PNG, PDF)

Example Request:

```
curl -X POST 'http://localhost:8000/extract' \
--form 'document=@"/path/to/document.pdf"' \
--form 'document=@"/path/to/document2.pdf"'
```

This schema is dynamic and will be generated based on the classification result.
Its general structure is fixed but the fields will vary based on the document type and country.
If the Schema for the document is not found, the system will attempt to classify the document type and country.

In this case, the response will be as follows:

```
{
   "status": "schema_generated",
   "message": "Schema generated and saved for review Extraction not performed.",
   "classification": {
      "document_type": "residence_card",
      "country": "XX",
      "confidence": 0.95
   },
"generated_schema": {
    "document_type": "residence_card",
    "country": "XX", // Country code in ISO 3166-1 alpha-2 format
    "confidence": 0.95, // Confidence level of the classification
    "schema": {
      "country_code": {
        "type": "string",
        "description": "The country code of the issuing country",
        "required": false,
        "example": "XX",
        "pattern": "^[A-Z]{2}$"
      },
      "document_header": {
        "type": "string",
        "description": "The main title of the document.",
        "required": false,
        "example": "DOCUMENT HEADER"
      },
      "document_number": {
        "type": "string",
        "description": "The unique document number of the residence card.",
        "required": false,
        "example": "DOC123456",
        "pattern": "^[A-Z]{3}d{6}$"
      },
      "surname": {
        "type": "string",
        "description": "The surname of the cardholder.",
        "required": false,
        "example": "SURNAME"
      },
      "given_names": {
        "type": "string",
        "description": "The given names of the cardholder.",
        "required": false,
        "example": "GIVEN NAMES"
      },
      "gender": {
        "type": "string",
        "description": "The gender of the cardholder (e.g., M for Male, F for
Female).",
        "required": false,
        "example": "M",
        "pattern": "^[MFO]$"
      },
      "nationality": {
        "type": "string",
        "description": "The nationality of the cardholder.",
        "required": false,
        "example": "XXX",
        "pattern": "^[A-Z]{3}$"
      },
      "date_of_birth": {
        "type": "string",
        "description": "The date of birth of the cardholder in DD/MM/YYYY
format.",
        "required": false,
        "example": "01/01/2000",
        "pattern": "^(0[1-9]|[12][0-9]|3[01])/(0[1-9]|1[0-2])/(\\d{4})$"
      },
      "expiry_date": {
        "type": "string",
        "description": "The expiry date of the residence card in DD/MM/YYYY
format.",
        "required": false,
        "example": "01/01/2030",
        "pattern": "^(0[1-9]|[12][0-9]|3[01])/(0[1-9]|1[0-2])/(\\d{4})$"
      },
      "type_of_title": {
        "type": "string",
        "description": "The type of residence title or permit granted.",
            "required": false,
            "example": "TYPE OF TITLE"
        },
        "family_member_status": {
            "type": "string",
            "description": "Indicates the family member status, often related to
EWR (European Economic Area) regulations.",
            "required": false,
            "example": "FAMILY MEMBER STATUS"
        },
        "article_reference": {
            "type": "string",
            "description": "The legal article reference pertaining to the residence
status.",
            "required": false,
            "example": "ARTICLE REFERENCE"
        },
        "remarks_label": {
            "type": "string",
            "description": "The label for the remarks section, if present.",
            "required": false,
            "example": "REMARKS"
        },
        "document_footer": {
            "type": "string",
            "description": "The footer text of the document, typically in English.",
            "required": false,
            "example": "DOCUMENT FOOTER"
        },
        "card_number": {
            "type": "string",
            "description": "A secondary card number, usually found at the bottom
right of the card.",
            "required": false,
            "example": "000001",
            "pattern": "^\\d{6}$"
        },
        "photo_present": {
            "type": "boolean",
            "description": "Boolean indicating if a photograph of the cardholder is
visible.",
            "required": false,
            "example": true
        },
        "signature_present": {
            "type": "boolean",
            "description": "Boolean indicating if a signature of the cardholder is
visible.",
            "required": false,
            "example": true
        },
        "information_unreadable": {
            "type": "boolean",
            "description": "Set to true if any required information is missing or
unreadable.",
            "required": true,
            "example": false
        },
        "is_document_correct": {
            "type": "boolean",
            "description": "Set to true if the document appears to be a valid
residence card.",
            "required": true,
            "example": true
        }
    }
},
"schema_id": "SCHEMA_ID"
}
```

Example Response (Extracted):

```
{
  "status": "extracted",
  "data": {
    "country_code": "XX",
    "document_header": "DOCUMENT HEADER",
    "document_number": "DOC123456",
    "surname": "SURNAME",
    "given_names": "GIVEN NAMES",
    "gender": "M",
    "nationality": "XXX",
    "date_of_birth": "01 01 2000",
    "expiry_date": "01 01 2030",
    "type_of_title": "TYPE OF TITLE",
    "family_member_status": "FAMILY MEMBER STATUS",
    "article_reference": "ARTICLE REFERENCE",
    "remarks_label": "REMARKS",
    "document_footer": "DOCUMENT FOOTER",
    "card_number": "000001",
    "photo_present": true,
    "signature_present": true,
    "information_unreadable": false,
    "is_document_correct": true
  },
  "classification": {
    "document_type": "residence_card",
    "country": "XX",
    "confidence": 0.95
  },
  "schema_used": {
    "document_type": "residence_card",
    "country": "XX",
    "version": 1
  }
}
```

Status Codes:

- 200: Extraction successful
- 400: Bad request (missing/invalid file, unsupported type, classification failed)
- 422: Classification confidence too low
- 500: Internal error

Error Examples:

```
{
   "detail": [
      {
         "type": "missing",
         "loc": ["body", "document"],
         "msg": "Field required",
         "input": null
      }
   ]
}
```

```
{
   "detail": "Unable to classify document type"
}
```

Schemas

GET /schemas

Purpose: List all document schemas in the system.

Request Parameters: None

Example Request:

```
curl -X GET http://localhost:8000/schemas
```

Example Response:
```
{
   "schemas": [
      {
         // Schema 1
      },
      {
         // Schema 2
      }
      // Additional schemas
   ],
   "total_count": 2
}
```

Status Codes:
- 200: Success
- 500: Internal error

Error Examples:
```
{
   "detail": "Failed to retrieve schemas: [error details]"
}
```

PUT /schemas/{schema_id}/approve

Purpose: Approve a schema currently in review, making it active.

Request Parameters:

Name	Type	Required	Description
schema_id	string	Yes	Schema ID (path parameter)

Example Request:

```
curl -X PUT http://localhost:8000/schemas/SCHEMA_ID/approve
```

Example Response:

```
{
   "message": "Schema approved successfully",
   "schema": {
      "id": "SCHEMA_ID",
      "document_type": "Document Type",
      "country": "XX",
      "status": "active",
      "version": 1,
      "updated_at": "2020-01-01T00:00:00.000000"
   },
   "deprecated_schema": null
}
```

Example Response (Error):

```
{
   "detail": "Failed to approve schema: 404: Schema not found"
}
```

```
{
    "detail": "Failed to approve schema: 400: Schema must be in IN_REVIEW status to approve"
}
```

Status Codes:

- 200: Success
- 404: Schema not found
- 500: Internal error

PUT /schemas/{schema_id}/modify

Purpose: Propose modifications to the latest schema version.

Request Parameters:

Name	**Type**	**Required**	**Description**
schema_id	string	Yes	Schema ID (path parameter)
request	JSON body	Yes	Modifications and description

Example Request:

```
curl --location --request PUT
'http://localhost:8000/schemas/SCHEMA_ID/modify' \
--header 'Content-Type: application/json' \
--data-raw '{
   "modifications": {
      "mobile_number": {
         "type": "string",
         "description": "Mobile phone number of the cardholder",
         "required": false,
         "example": "+123-456789012",
         "pattern": "^[+]?123[0-9]{9}$"
      },
      "email_address": {
         "type": "string",
         "description": "Email address of the cardholder",
         "required": false,
         "example": "user@example.com"
      },
      "address": {
         "type": "string",
         "description": "Residential address of the cardholder",
         "required": false,
         "example": "123 Main Street, City, 12345"
      }
   },
   "change_description": "Added mobile_number, email_address, and address
fields to capture contact details of the residence card holder"
}'
```

Response Structure:

```
{
  "status": "schema_modified",
  "message": "Schema successfully modified and saved",
  "original_schema_info": {
    "id": "OLDER_SCHEMA_ID",
    "version": 2,
    "status": "deprecated"
  },
  "new_schema_info": {
    "id": "NEW_SCHEMA_ID",
    "document_type": "residence_card",
    "country": "XX",
    "status": "in_review",
    "version": 3,
    "created_at": "2020-01-01T00:00:00.000000",
    "updated_at": "2020-01-01T00:00:00.000000"
  },
  "modification_details": {
    "schema_id": "NEW_SCHEMA_ID",
    "current_version": 2,
    "proposed_version": 3,
    "changes": [
      {
        "change_type": "field_added",
        "field_name": "mobile_number",
        "old_value": null,
        "new_value": {
          "type": "string",
          "description": "Mobile phone number of the cardholder",
          "required": false,
          "example": "+123-456789012"
        }
      },
      {
        "change_type": "field_added",
        "field_name": "email_address",
        "old_value": null,
        "new_value": {
          "type": "string",
          "description": "Email address of the cardholder",
          "required": false,
          "example": "user@example.com"
        }
      },
      {
        "change_type": "field_added",
        "field_name": "address",
        "old_value": null,
        "new_value": {
          "type": "string",
          "description": "Residential address of the cardholder",
          "required": false,
          "example": "123 Main Street, City, 12345"
        }
      }

    ],
    "original_schema": {
      // Older Schema
    },
    "modified_schema": {
      // Newer Schema with the modifications
    },
    "change_summary": "Added 3 field(s): mobile_number, email_address,
address",
    "modification_metadata": {
      "modification_timestamp": "2025-07-17T07:11:17.247894+00:00",
      "total_changes": 3,
      "change_types": {
        "added": 3,
        "updated": 0,
        "removed": 0
      },
      "change_description": "Added mobile_number, email_address, and address
fields to capture contact details of the residence card holder",
      "affected_fields": [
        "mobile_number",
        "email_address",
        "address"
      ]
    }
  },
  "note": "Changes have been saved to the database"
}
```

The status for the older schema will be set to DEPRECATED and the new schema will be set to IN_REVIEW.

The newer schema will have the same document_type and country as the older schema, but with an incremented version number.

To remove a field, set its value to null in the modifications object.

Example Request (Remove Field):

```
curl --location --request PUT
'http://localhost:8000/schemas/SCHEMA_ID/modify' \
--header 'Content-Type: application/json' \
--header 'Accept: application/json' \
--data '{
   "modifications": {
     "email_address": null
   },
   "change_description": "Remove email_address field from schema "
 }'
```

Response Similar to above.

Example Response (Error):

```
{
   "detail": "Failed to apply schema modification: 404: Schema not found"
}
```

If Older Schema is modified, the response will be:

```
{
  "detail": "Failed to apply schema modification: 400: Cannot modify schema
version, only the latest version can be modified. Latest schema ID:
LATEST_SCHEMA_ID"
}
```

Status Codes:

- 200: No changes detected
- 201: Schema modified
- 404: Schema not found
- 500: Internal error