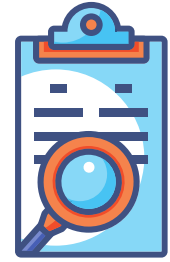




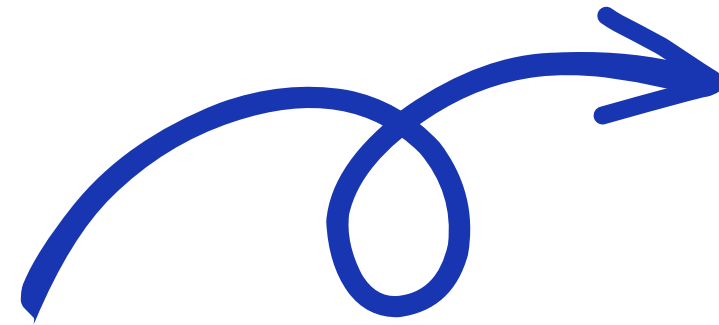
**Ayoto**

# Problems



## **Problem 1**

Unavailability of  
Preliminary  
Diagnosis Service



**Anxiety**

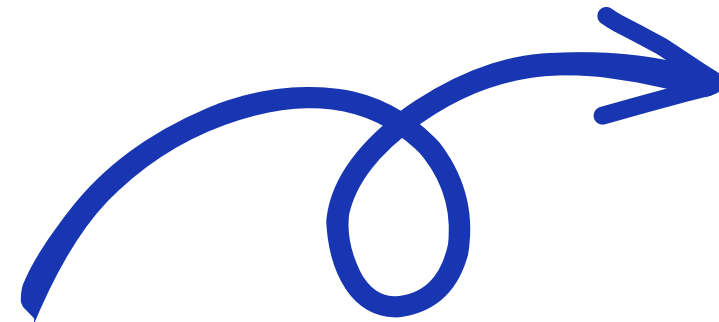
**Delayed treatment**

**Inaccurate self-diagnosis**



## **Problem 2**

Difficulty Finding  
Suitable Doctors

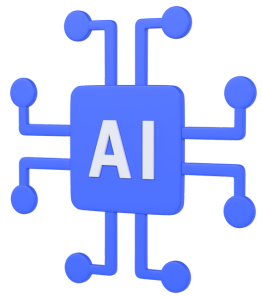


**Suboptimal treatment  
outcomes**

**Frustrating healthcare  
experience**

# Solutions

## Solution 1



### AI-Driven Preliminary Diagnosis

Our AI-driven solution provides users with a preliminary diagnosis service, utilizing advanced algorithms and medical knowledge. This empowers individuals to seek appropriate medical attention.

## Solution 2

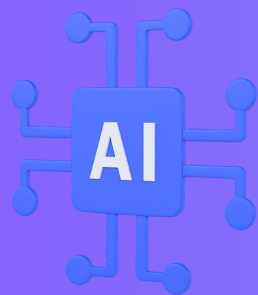


### Personalized Doctor Recommendations

Utilizing an extensive dataset of specialized doctors, users can connect with doctors with expertise and experience to address their unique needs, enhancing their experience and access to specialized doctors.

# Product

Our health startup offers a comprehensive range of innovative products and services that address the key challenges faced by individuals seeking preliminary medical diagnosis and accessing suitable doctors.



Preliminary Diagnosis Service



Doctor Discovery and Booking



Health Records Management

# Technology Stack



# Website Demo

# Website Demo

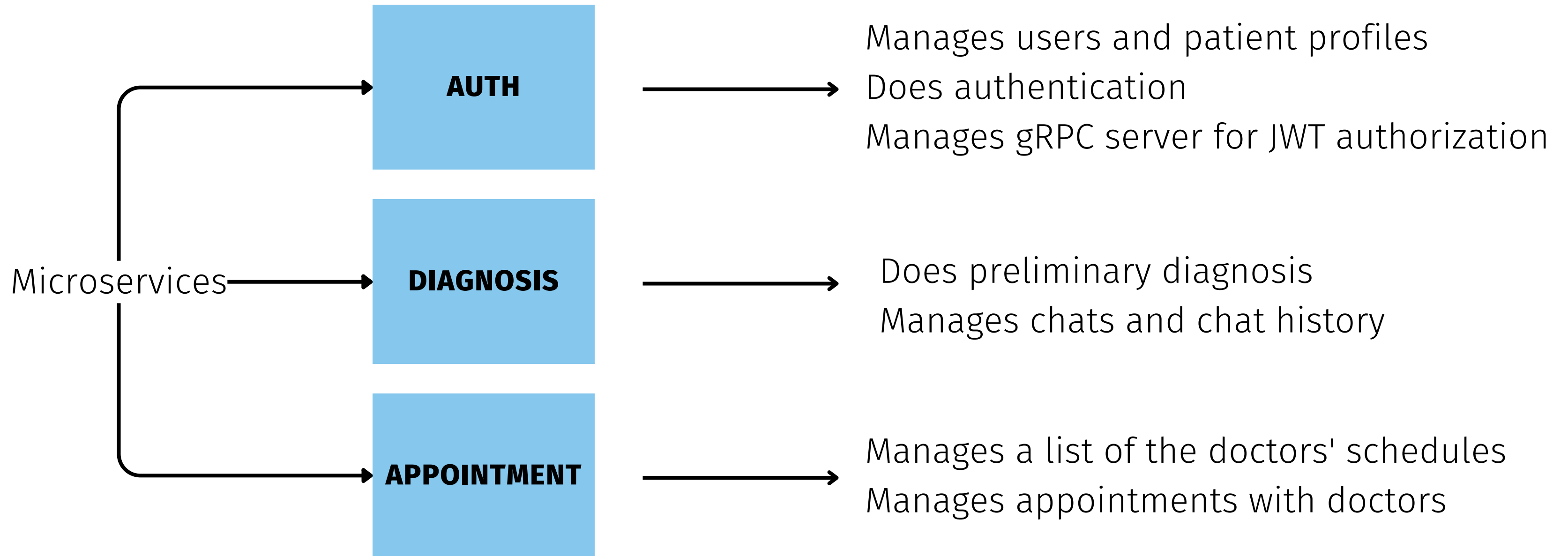
# Mobile Application Demo



# **Mobile App Demo**

# BackEnd

# Architecture



# Utilities

**Scraper**



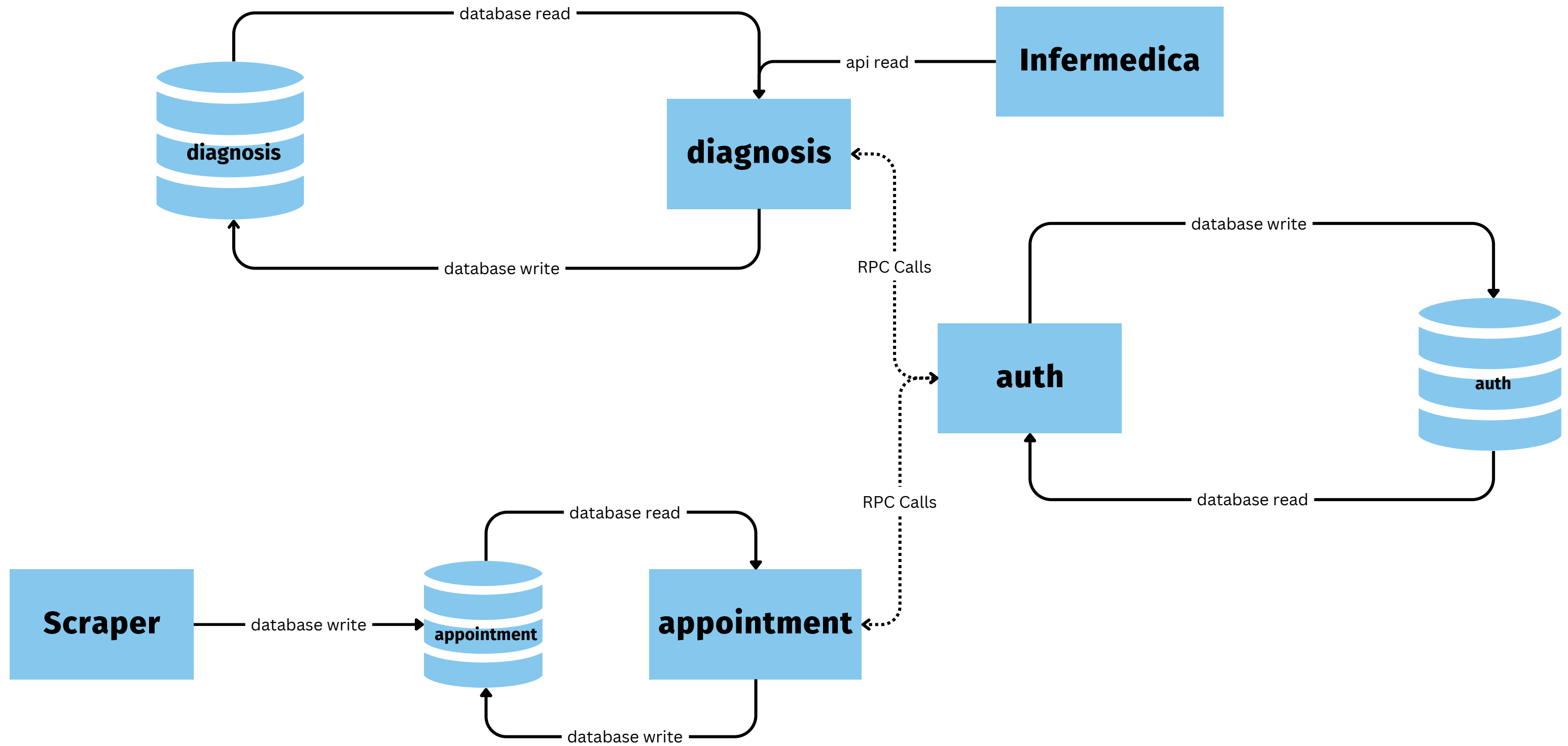
Collects data about 1400 doctors in Bangladesh Data includes: names, specializations, schedules, etc.

**Python  
Infermedica  
Library**



Provides abstraction for API calls to Infermedica endpoints  
Manage states for the stateless Infermedica api

# Component Diagram



# Swagger Documentation

FastAPI <sup>0.1.0</sup> <sup>OAS 3.1</sup>

/auth/openapi.json

Servers

/auth

Authorize 

## default

GET / Index

## auth

POST /register Register

POST /confirm Confirm Registration

POST /login Login

## profile

POST /profile/create Create Profile

GET /profile/current-profile Current Profile

# API Specification

## default

GET / Index

## auth

POST /register Register

POST /confirm Confirm Registration

POST /login Login

## profile

POST /profile/create Create Profile

GET /profile/current-profile Current Profile

## Schemas

BaseResponse > Expand all object

ConfirmRegistration > Expand all object

CreateProfile > Expand all object

HTTPValidationError > Expand all object

POST /login Login Try it out

Parameters

No parameters

Request body **required** application/json

Example Value | Schema

```
{
  "identifier": "string",
  "password": "string"
}
```

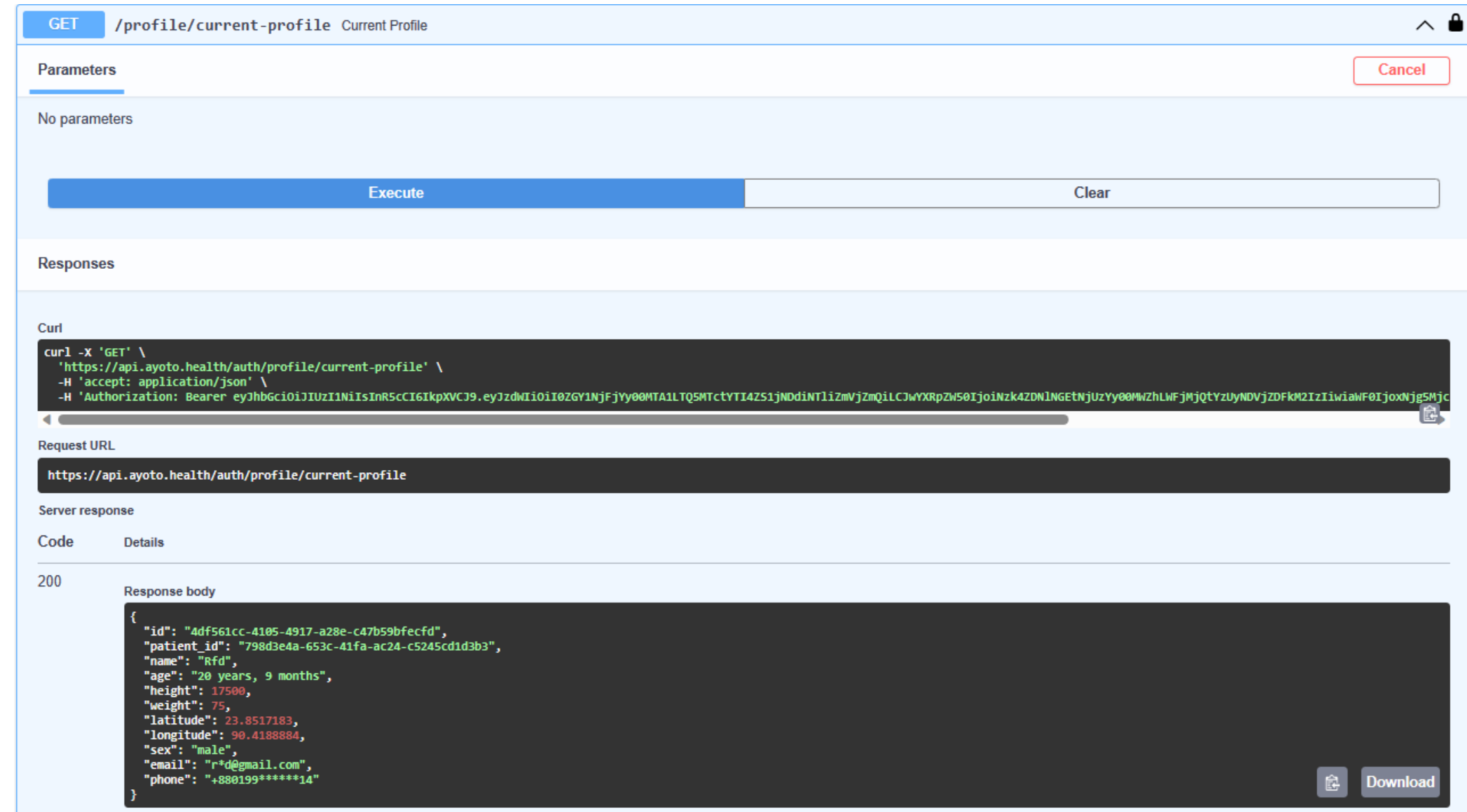
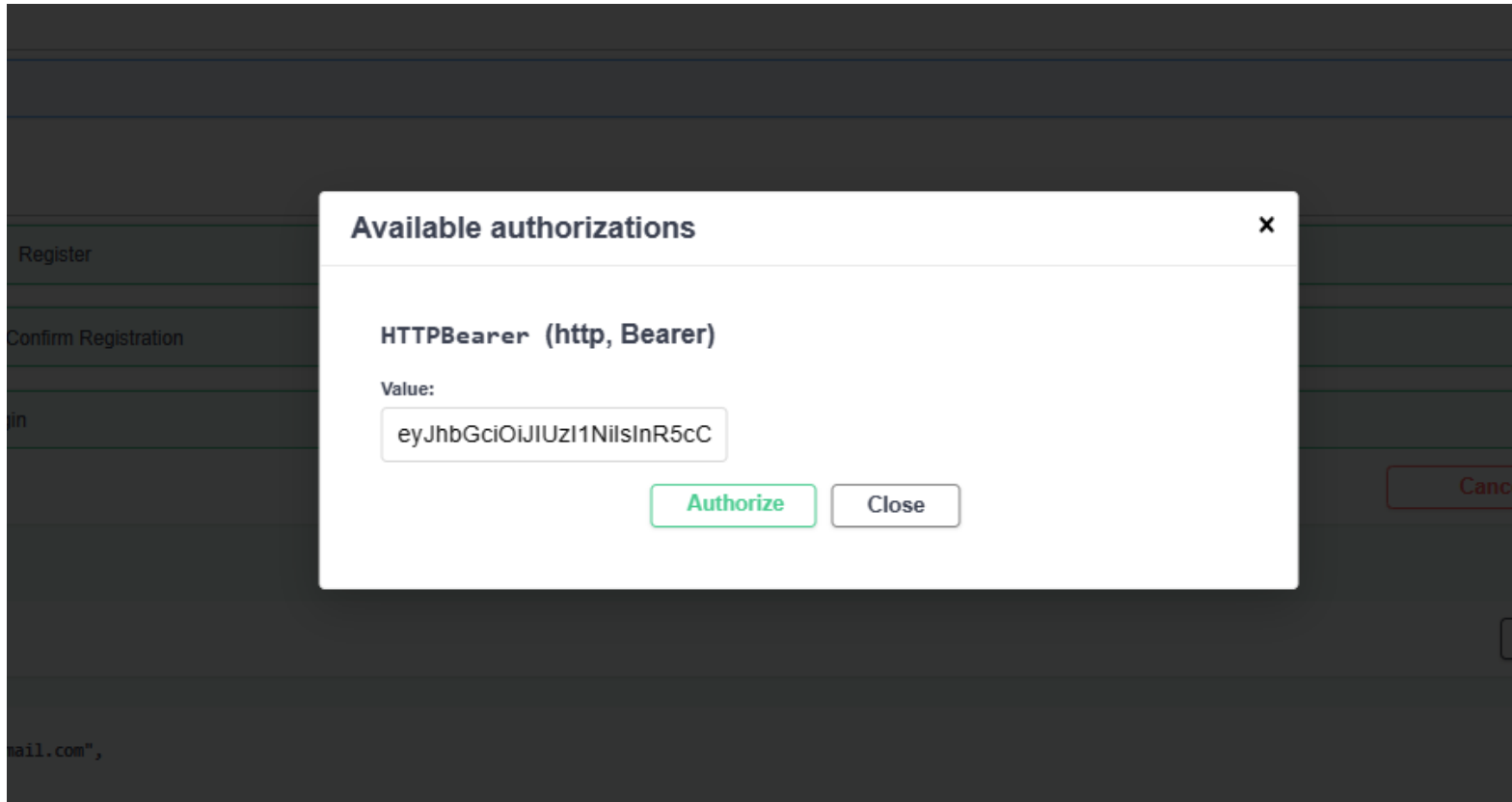
Responses

Code	Description	Links
200	Successful Response	No links
Media type: <span>application/json</span> <small>Controls Accept header.</small>		
Example Value   Schema		
<pre>{   "success": true,   "message": "string",   "token": "string" }</pre>		
422	Validation Error	No links
Media type: <span>application/json</span>		
Example Value   Schema		
<pre>{   "detail": [     {       "loc": [         "string",         0       ],       "msg": "string",       "type": "string"     }   ] }</pre>		





# Authorization



# Security and Privacy

## Security

Secrets management on the deployment stage only (using Vault)

JWT tokens for authentication

SSL enabled for all subdomains

GRPC calls only within the cluster network

Protection against common cyber attacks (DDoS, path traversal, etc.)

## Privacy

### Compliant to GDPR and HIPAA

User data is pseudonymized

Automatic removal of chat history after 7 days

Short authorization token expiry time

Accurate personal data (excl. name) is never shown on the screen

# DevOps

# DigitalOcean Apps






# DigitalOcean Apps

## Create App

- 1 Resources
- 2 Environment Variables
- 3 Info
- 4 Review

### Create Resource From Source Code

#### Service Provider

-  GitHub
-  GitLab
-  DigitalOcean Container Registry
-  Docker Hub
-  Other: Choose Sample App

#### Repository

AyotoAI/ayoto-backend-diagnosis



# DigitalOcean Apps

✓ Environment Variables




✓ Info

4 Review

Name ayoto-backend-diagnosis [Edit](#)

Resource Type [?](#)  Web Service [Edit](#)  
 Python

Build Phase [STEPS](#) [Edit](#)

-  Python Buildpack v2.231.4
  -  Procfile Buildpack v0.0.3
  -  Custom Build Command Buildpack v0.1.1
- No build command defined

Run Command [?](#)

Run Command

```
alembic upgrade head
uvicorn main:app --root-path /diagnosis --host
0.0.0.0 --port 8080
```

# Kubernetes

# Kubernetes

The screenshot displays the Kubernetes dashboard interface. At the top, there is a navigation bar with the Kubernetes logo, a dropdown menu for 'All namespaces', a search bar, and utility icons. Below this is a blue header for the 'Workloads' section. A left-hand sidebar lists various Kubernetes resources, including Workloads, Service, Config and Storage, and Cluster. The main content area is divided into two sections. The top section, 'Workload Status', features four green circular gauges representing the status of Daemon Sets (6 running), Deployments (10 running), Pods (23 running), and Replica Sets (50 running). The bottom section, 'Daemon Sets', contains a table with columns for Name, Namespace, Images, Labels, Pods, and Created. It lists three Daemon Sets: 'do-node-agent', 'csi-do-node', and 'cpc-bridge-proxy', all in the 'kube-system' namespace and showing 2/2 pods.

Name	Namespace	Images	Labels	Pods	Created
do-node-agent	kube-system	docker.io/digitalocean/do-agent:3.16.2	app: do-node-agent c3.doks.digitalocean.com/component: do-node-agent c3.doks.digitalocean.com/plane: data	2 / 2	4 days ago
csi-do-node	kube-system	registry.k8s.io/sig-storage/csi-node-driver-registry:v2.8.0 docker.io/digitalocean/do-csi-plugin:v4.6.1	c3.doks.digitalocean.com/component: csi-node-service c3.doks.digitalocean.com/plane: data doks.digitalocean.com/managed: true	2 / 2	4 days ago
cpc-bridge-proxy	kube-system	digitalocean/cpbridge:1.24.0	app: cpc-bridge-proxy c3.doks.digitalocean.com/component: cpc-bridge-proxy c3.doks.digitalocean.com/plane: data	2 / 2	4 days ago



# Terraform

# Terraform

The screenshot shows a GitHub repository page for 'ayoto-tf-digitalocean'. The repository is private and has 1 branch (main) and 0 tags. The commit history shows a recent update to AUTH\_RPC\_HOST by user ahmedXDR. The file list includes various Terraform configuration files (.tf) and a README.md. The right sidebar shows repository statistics: 0 stars, 1 watching, and 0 forks. The 'Languages' section shows HCL at 100.0%.

Navigation: <> Code, Issues, Pull requests, Actions, Projects, Security, Insights, Settings

Repository: ayoto-tf-digitalocean (Private)

Branches: main (1 branch), Tags: 0 tags

Buttons: Go to file, Add file, Code

Commit: ahmedXDR Update AUTH\_RPC\_HOST (a05357f, 14 hours ago, 70 commits)

File	Commit Message	Time
.gitignore	init	last week
.terraform.lock.hcl	Update AUTH_RPC_HOST	14 hours ago
README.md	Create README.md	last week
backendauth.tf	Update AUTH_RPC_HOST	14 hours ago
backenddiagnosis.tf	Update AUTH_RPC_HOST	14 hours ago
certmanager.tf	add backenddiagnosis to kubernetes	last week
cloudflare.tf	Add authrpc	2 days ago
dataserver.tf	Add db creds to dataserver	4 days ago
digitalocean.tf	Bug fixes	4 days ago
provider.tf	change domain	last week
traefik.tf	Add dataserver	4 days ago
webfrontend.tf	Bug fixes	4 days ago

About: No description, website, or topics provided.

Releases: No releases published. Create a new release.

Packages: No packages published. Publish your first package.

Languages: HCL 100.0%

# Terraform

The screenshot displays the Terraform Cloud interface for a workspace named 'ayoto-tf-digitalocean'. The left sidebar contains navigation options: Workspaces, Overview (selected), Runs, States, Variables, and Settings. The main content area is titled 'Latest Run' and shows a successful update of 'AUTH\_RPC\_HOST' triggered by 'ahmedXDR' 14 hours ago. A summary bar indicates 38 resources and 0 outputs. Below this is a table of resources with columns for Name, Provider, Type, Module, and Created date. The right sidebar provides additional details: project name 'AyotoAI/ayoto-tf-digitalocean', execution mode 'Remote', auto apply status 'On', and metrics for the last 21 runs, including average plan and apply durations, total failed runs, and policy check failures. There are also sections for tags and run triggers.

### Latest Run

Update AUTH\_RPC\_HOST Applied

ahmedXDR triggered a run 14 hours ago via main → a05357f

Policy checks	Estimated cost change	Plan & apply duration	Resources changed	
Add	Enable	Less than a minute	+0 ~1 -0	<a href="#">See details</a>

Resources **38** Outputs **0** Current as of the most recent state version.

Filter resources

NAME	PROVIDER	TYPE	MODULE	CREATED ↓
api-main-cluster	cloudflare/clou...	cloudflare_r...	root	Jul 11 2023
ayoto	digitalocean/di...	data.digital...	root	Jul 8 2023
ayoto	digitalocean/di...	digitalocean...	root	Jul 8 2023
ayoto_secrets	hashicorp/hcp	data.hcp_vau...	root	Jul 8 2023
backend	hashicorp/kuber...	kubernetes_n...	root	Jul 8 2023
backendauth	hashicorp/kuber...	kubernetes_s...	root	Jul 8 2023
backendauth	hashicorp/kuber...	kubernetes_d...	root	Jul 8 2023
backendauth	hashicorp/kuber...	kubernetes i...	root	Jul 8 2023

### Metrics (last 21 runs)

Average plan duration	< 1 min
Average apply duration	< 1 min
Total failed runs	7
Policy check failures	0

### Tags (0)

Add a tag

Tags have not been added to this workspace.

### Run triggers

No source workspaces have been selected. Adding run triggers will allow runs to queue automatically in this workspace.

### Contributors (1)

○

# GitHub Actions

# GitHub Actions

The screenshot displays the GitHub Actions interface for a workflow named "Add deployment workflow #1". The top navigation bar includes links for Code, Issues, Pull requests, Actions, Projects (with a count of 1), Security, Insights, and Settings. The left sidebar shows a navigation menu with "Build and deploy" selected, and sub-items for "Summary", "Jobs" (listing "build\_and\_push" and "restart\_deployment"), "Run details", "Usage", and "Workflow file".

The main content area shows a summary of a successful run. A table lists the run details:

Re-run triggered 4 days ago	Status	Total duration	Billable time	Artifacts
ahmedXDR -> f58c90b develop	Success	1m 16s	5m	-

Below the table, the workflow file "deploy-on-push.yml" is shown, triggered by "on: push". A visual flow diagram shows two jobs: "build\_and\_push" (51s) and "restart\_deployment" (6s), both marked as successful with green checkmarks.

# Business Plan

# Business Model

## Customer Segments

### Individual Users

We target individuals who require preliminary medical diagnosis and assistance in finding suitable doctors.

### Corporate Clients

We also target corporate clients, including hospitals and individual doctors, who seek to provide value-added healthcare services to their customers.

## Revenue Streams

### Doctor Booking Fees

Percentage from the doctor and diagnosis appointment fees

### Advertising and Sponsorships

We offer advertising opportunities to relevant stakeholders who want to reach our user base

### Premium Accounts

Enhanced features and benefits  
Subscription-based model, generating recurring revenue

## Key Partnerships

### Health Insurance Companies

Partnerships with health insurance providers to offer our services as part of their offerings, providing added value to their policyholders

# Market Size

**169.4 M**

Total Available Market (TAM)

---

**90 M**

Serviceable Available Market (SAM)

---

**35M**

Serviceable Obtainable Market (SOM)



# Direct Competitors

- ◆ Praava
- ◆ DoctorKoi
- ◆ Pulse
- ◆ Hia
- ◆ Lifeplus
- ◆ Doctime

# Indirect Competitors

- ◆ Traditional Brick-and-Mortar Clinics
- ◆ General Health Information Websites

# Competitive Advantages

## ◆ **Advantage 1**

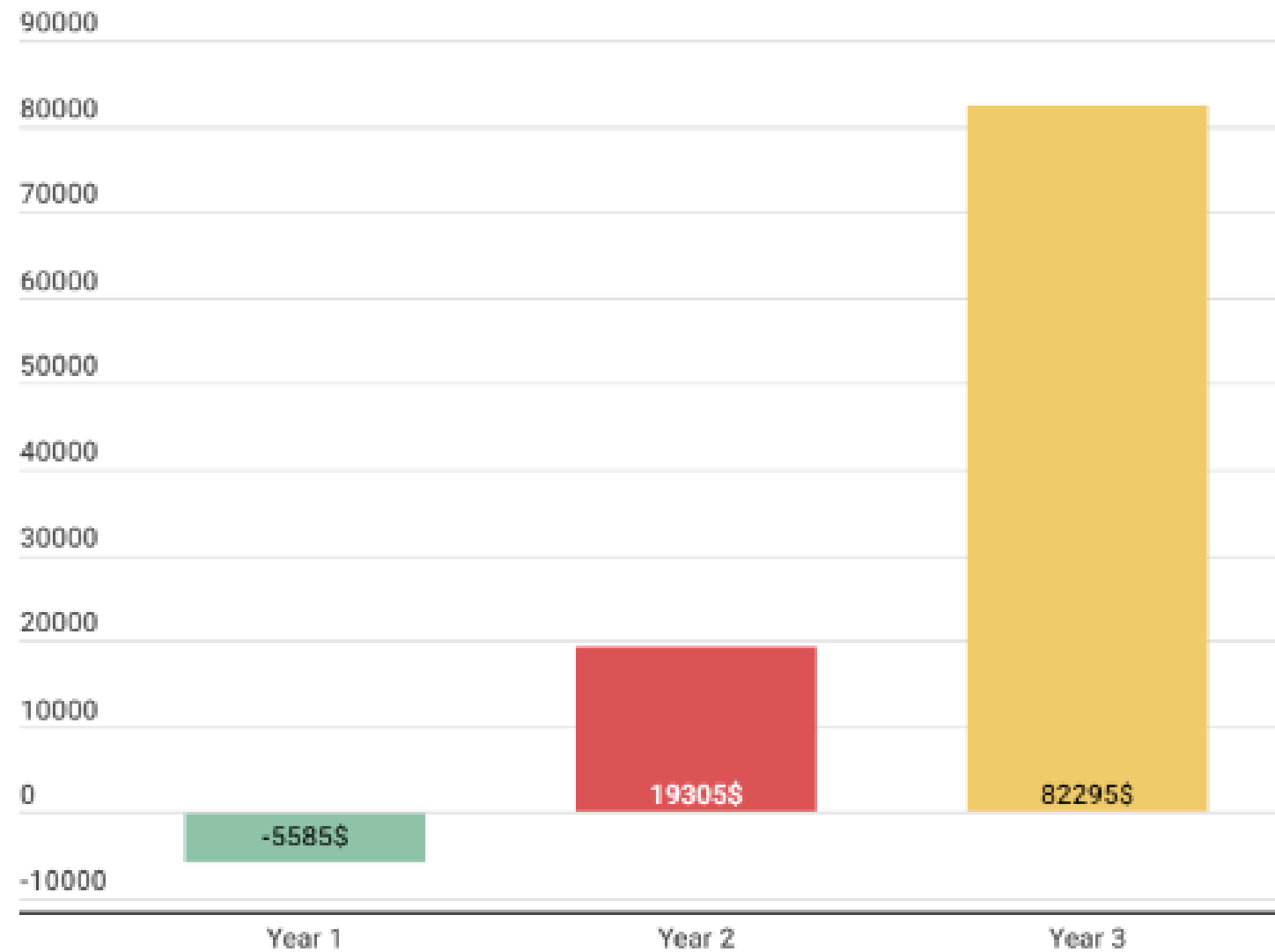
AI-driven diagnosis: The game changer. Unprecedented in the country.

## ◆ **Advantage 2**

Personalized doctor recommendations instead of generic doctor name lists.

# Break-Even Analysis

## Break-even Analysis



The following table shows the projected profit and loss for the first 3 years:

Item	Year 1	Year 2	Year 3
Hosting and APIs	4,055\$	2,530\$	2,530\$
Marketing	1,680\$	1,680\$	1,680\$
Developing our own models	3,050\$	0\$	0
<b>Total Expenses</b>	<b>8,785\$</b>	<b>4,210\$</b>	<b>45,010\$</b>
<b>Total Revenue</b>	<b>3,200\$</b>	<b>29,100\$</b>	<b>108,000\$</b>
<b>Profit</b>	<b>-5,585\$</b>	<b>19,305\$</b>	<b>82,295\$</b>

# Expected Costs & Revenue of First 3 years

Year 1			
Item	No. of Items	AVG. Price	Total
Commission Per Visit	10000	0.3\$	3,000\$
Premium Accounts	100	2\$	200\$
<b>Total</b>			<b>3,200\$</b>
Year 2			
Item	No. of Items	AVG. Price	Total
Commission Per Visit	75000	0.3\$	22,500\$
Advertisement	36	100\$	3,600\$
Premium Accounts	750	4\$	3,000\$
<b>Total</b>			<b>29,100\$</b>
Year 3			
Item	No. of Items	AVG. Price	Total
Commission Per Visit	300000	0.3\$	90,000\$
Advertisement	60	100\$	6,000\$
Premium Accounts	3000	4\$	12,000\$
<b>Total</b>			<b>108,000\$</b>

Item	Unit	No. of Units	No. of Items	Unit Price	Total
<b>Team Salaries</b>					
CEO	Month	12	1	500\$	6,000\$
COO	Month	12	1	400\$	4,800\$
Frontend web developer	Month	12	1	500\$	6,000\$
Backend Developer	Month	12	2	500\$	12,000\$
DevOps Engineer	Month	12	1	100\$	1,200\$
Mobile Developer	Month	12	2	450\$	10,800\$
<b>Salaries Total</b>					<b>40,800\$</b>
<b>Others</b>					
Domain	Year	3	2	15\$	90\$
Web hosting & APIs	Month	36	1	200\$	7,200\$
PlayStore Account	Account	1	1	25\$	25\$
AppStore Account	Year	3	1	100\$	300\$
Infermedica API	API Call	3000	1	1\$	1,500\$
Paid Ads	Month	36	1	10\$	360\$
Graphics Freelancer	Month	36	1	30\$	1,080\$
Influencers Payment	Person	18	2	100\$	3,600\$
ML Engineer Payment	Model	2	1	450\$	900\$
High Performance GPUs	Month	3	1	50\$	150\$
Data Annotators	Month	4	5	100\$	2,000\$
<b>Others Total</b>					<b>17,205\$</b>

# Our Team



**Mostafa Kira**  
Business Manager



**Md Motasim Bhuiyan**  
PR Manager, Backend Developer



**Zeyad Alagamy**  
Frontend Developer



**Fedor Krasilnikov**  
Backend Developer



**Ahmed Soliman**  
DevOps Engineer



**Mohamed Nguira**  
Mobile Developer



**Pavel Roganin**  
Mobile Developer



# Acknowledgement



**Abrar Auhin**

Helped us to collect data about the market in Bangladesh



**Mohamed Ayoub Chebbi**

Helped us to make a beautiful design for our platform



**Arnold Etaba**

Helped us designing our database schema based on pseudonymization



**Abdullah Al Noman**

Helped us go through HIPAA and GDPR policies



**Ayoto**

# Contact Us

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contact@ayoto.health  
+8801705396463

<https://app.ayoto.health>