Zorya

Web Platform for data lakes and exploration of artificial intelligence for Digital Pathology

M2: Presentation of the lifecycle architecture

Projeto em Informática 24/25

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CONTEXT AND GOALS

Characteristics-driven search

Sample comparison

AI-assisted Automated Annotation

Improved Workflow

Normalization with medical ontologies
(e.g. SNOMED CT, ICD-O)

STATE OF THE ART

Tasks	QuPath	OpenSlide	ImageJ	CellProfiler	Kaapana	Zorya
Diverse Image Repositories	✗	✗	✗	✗	✓	✓
Assign Cases to Specialists	✗	✗	✗	✗	✗	✓
User Management	✗	✗	✗	✗	✓	✓
Image Annotation Tools	✓	✗	✓	✓	✗	✓
AI-Assisted Diagnosis Integration	✓	✗	✓	✓	✓	✓

FUNCTIONAL REQUIREMENTS

Image Analysis Viewer with Zoom and Navigation Tools

Annotation of Images and External AI Analysis Tools

Metadata Management

Support for different medical image formats

Users can receive notifications of events

Users can assign tasks to other users

NON-FUNCTIONAL REQUIREMENTS

PERFORMANCE

The system must maintain fast response times as usage grows.

SECURITY

Secure authentication must be enforced.

USABILITY

The interface should be intuitive with minimal training required.

RELIABILITY

Data must not be lost in case of a system crash.

MAINTAINABILITY

A modular architecture should allow easy future enhancements.

EXTENSIBILITY

The system must provide clear API documentation for integration

ACTORS

Doctor / Researcher

Team Leader

Admin

Data Manager

USER STORIES

As Dr. Ana Rodrigues, a pulmonology specialist,

I want to annotate key regions in whole-slide images and compare them with previous cases,

So that I can efficiently diagnose lung diseases with AI-assisted validation.

USER STORIES

As Dr. Miguel Almeida, the head of the Medical Imaging Department,

I want to efficiently assign pathology datasets to specialists based on organ, tissue type, and pathology,

So that I can streamline workflow and ensure cases are reviewed by the most qualified professionals.

USER STORIES
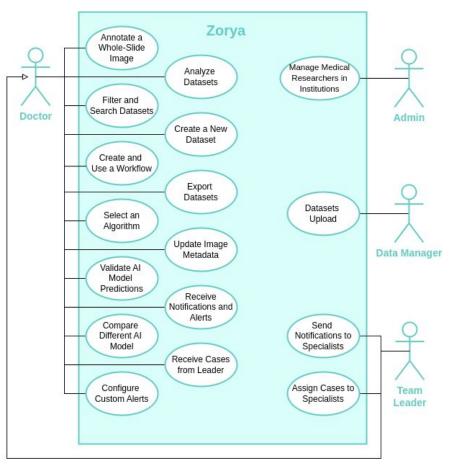
As João Alberto, an administrator of the Zorya platform

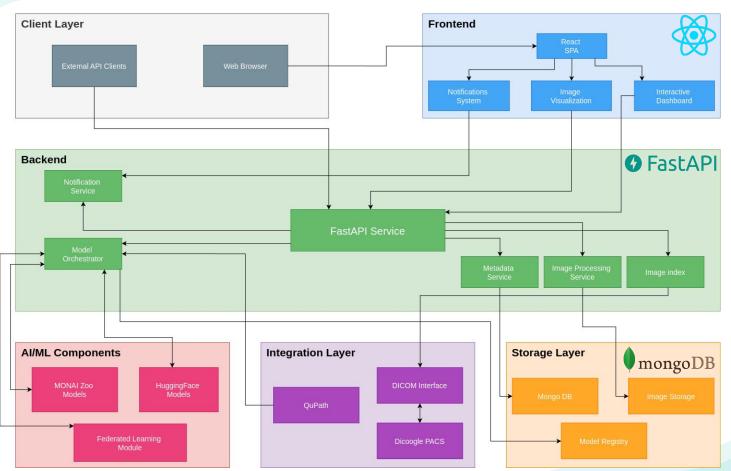**I want to** view events and logs related to user actions
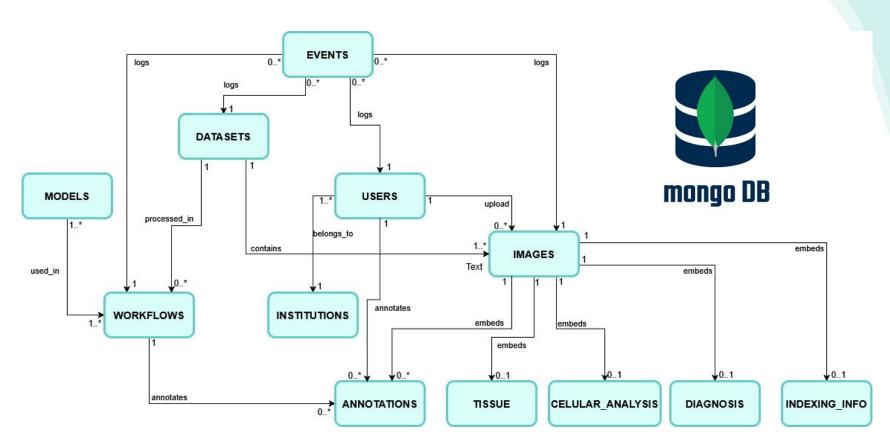
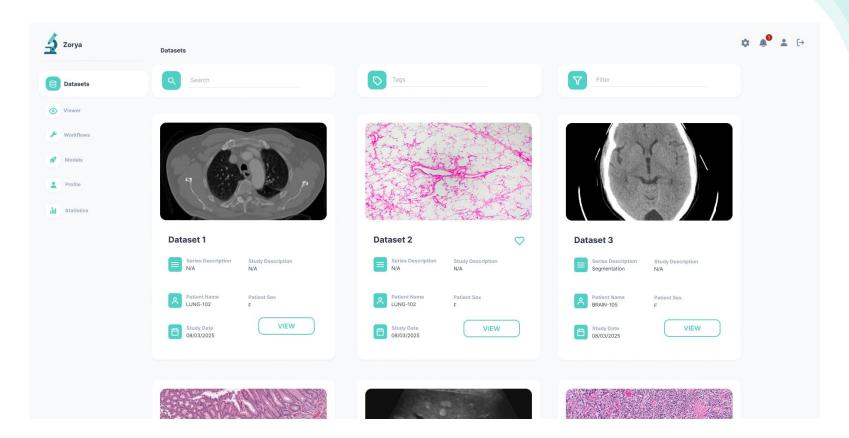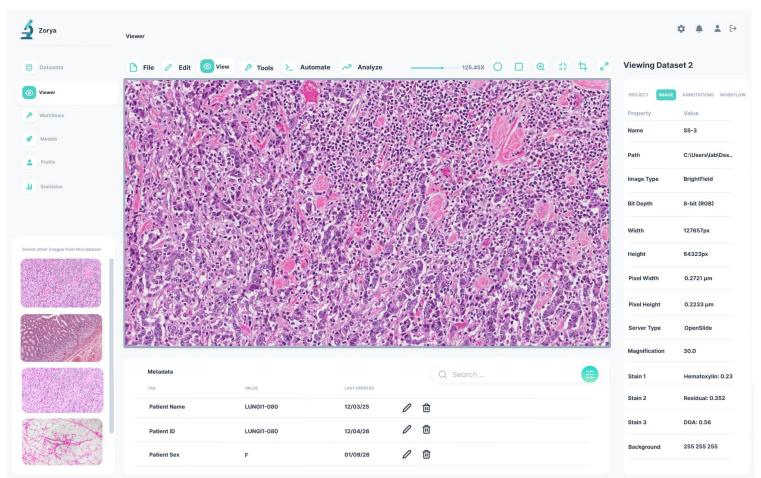**So that** I can monitor system usage and investigate issues

USE CASES

SYSTEM ARCHITECTURE
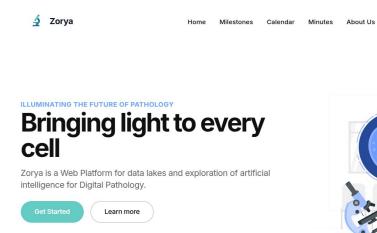
DOMAIN MODEL

MOCK-UPS

MOCK-UPS

MOCK-UPS

MOCK-UPS
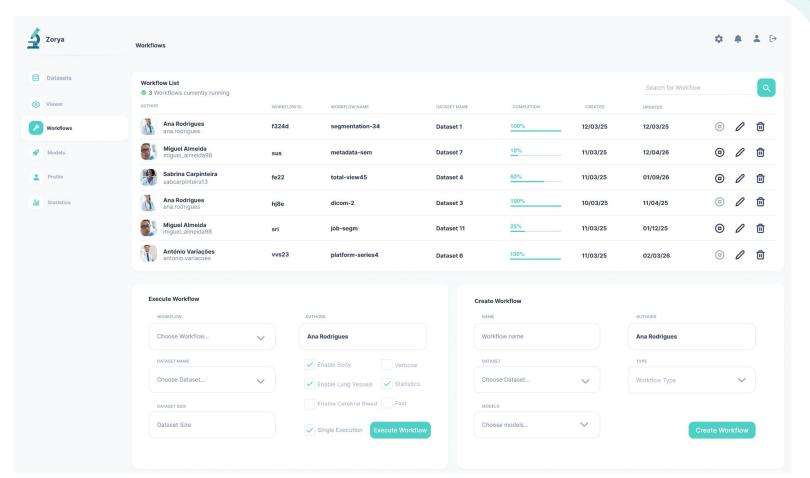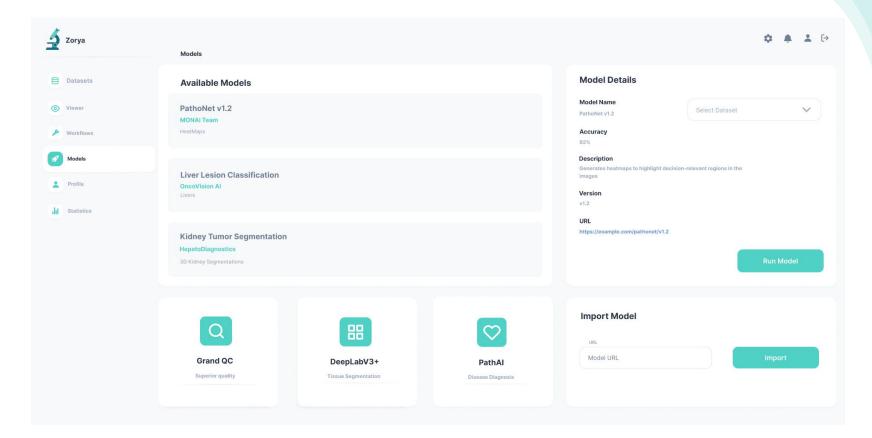
Documentation Website

https://zorya-docs.github.io/