MRI Scanner

Spring class 2025

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Spring class 2025

Problem Statement

The Limited number of radiologists available across the country.

Disability due to late detection of disorders.

The radiologist workloads increase which may affect the quality of diagnosis.

The quality of diagnosis can be compromised due to insufficient training and skills.

Solution

To develop a web-based application for detecting musculoskeletal abnormalities of the wrist.
To use and statistically analyze voting-based classification hierarchy.
To study and examine the pre-trained networks such as DensNet

CMO

Abduganiev Abdullokh

CMO (Chief Marketing Officer)

Market: size, growth rate, and trends.

- Market: Musculoskeletal (MSK) Health & AI Diagnostics.
- Size: 7.2 billion USD in 2023 and is projected to reach around USD 10–12 billion by 2030, driven by rising demand for early disease diagnosis
- Trends: Shift to preventative care, telehealth adoption, demand for objective assessment tools, AI integration.

Statistics:

- MSDs affect 120 in 1000 adults globally.
- Workplace MSDs cost businesses billions annually (e.g., $20B in direct US costs).
- Early detection can reduce treatment costs by (30-50%).

COO (Chief Operating Officer)

Sevinch Rustamova

🧩 Operations & Execution: Research Mapping from the Project

✅ Process Optimization

Text segmentation using deep learning (U-Net) and removal of noisy labels increased classification performance.
Voting-based ensemble classification optimized predictive accuracy (from individual model ~0.83 to ensemble model ~0.884).
The project involved several iterative steps—preprocessing, model training, voting logic—which mirrors lean/agile process design in operations.

Supply Chain and Logistics

Though not directly related to logistics, the layered pipeline of frontend, backend, and model logic simulates a workflow logistics model.
Handling large-scale image data (MURA) with distributed data augmentation and storage implies effective data logistics.

Operational Risks

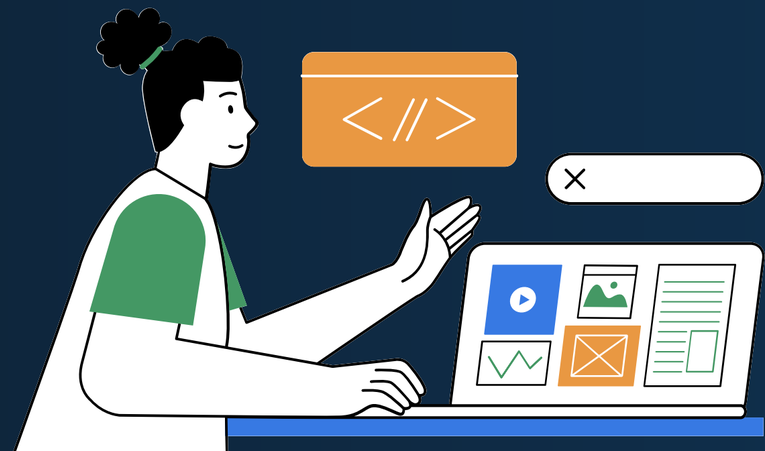
Risk: Classifiers misled by textual noise in X-rays.
Mitigation: Built a text segmentation layer to eliminate artifacts before model inference.
Risk: Uneven data class distribution.
Mitigation: Used augmentation to balance datasets.

CTO

Muzaffar Abdug’afforov

Project Goal

1. To develop a web-based application for the detection of musculoskeletal abnormalities of the wrist.
2. To use and statistically analyze voting-based classification hierarchy
3. To study and examine the pre-trained networks such as DenseNet.
4. To propose the procedure to remove the noisy text from the radiographs in order to improve the classification result.



Technologyes

Frontend development :

- HTML, CSS, and JavaScript have been used.

Backend development:

- Python language with some of its pre-built packages like NumPy, OpenCV, pandas, TensorFlow, Keras, and deep learning methods

Database:

- MySQL

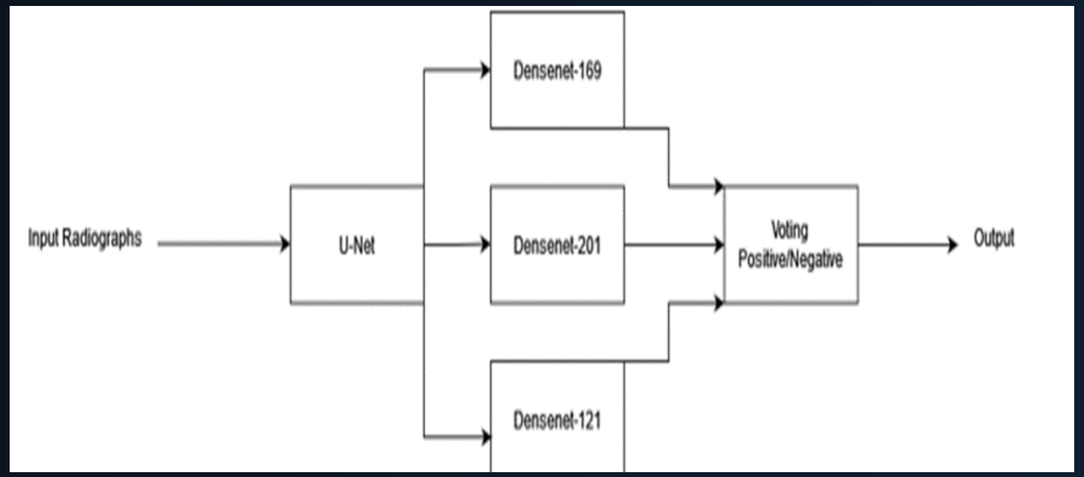
Ground Truth Dataset for Segmentation.

- We have used MATLAB for the creation of ground truth dataset to remove text noise.

Servers:

- AWS Coud Services

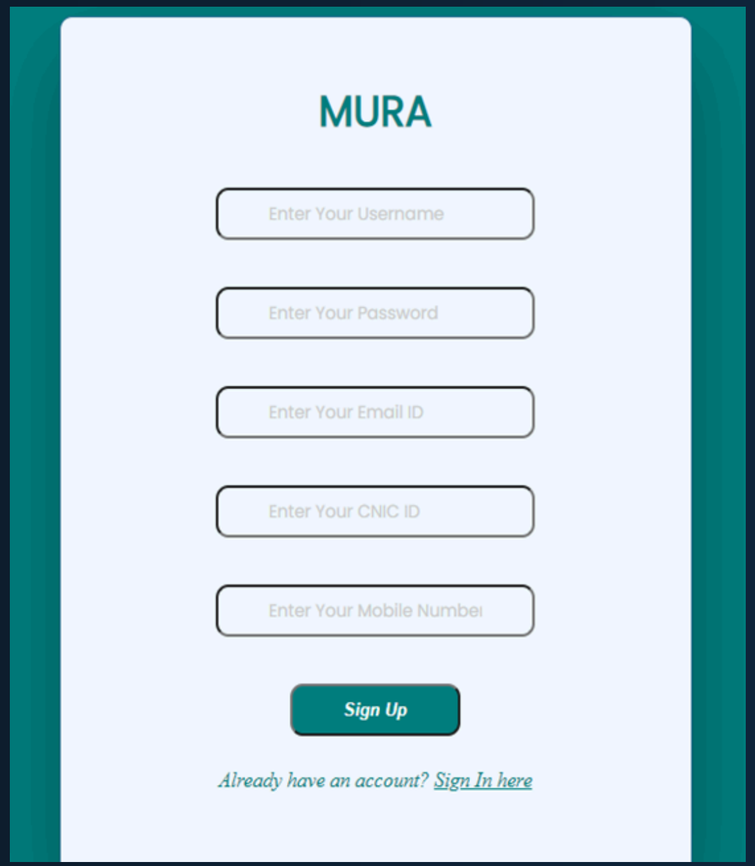
Quick Overview of Model

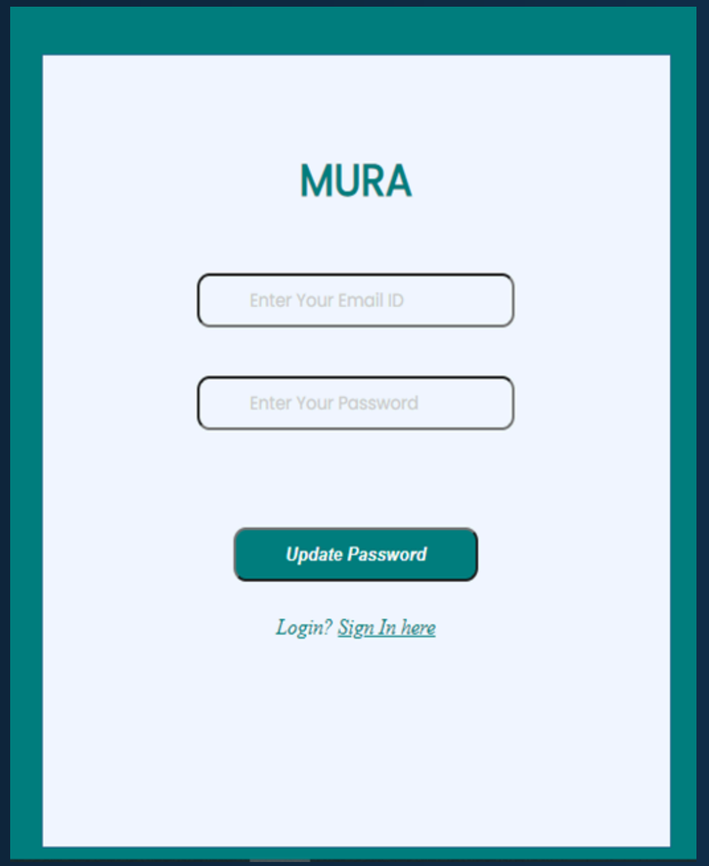


Input → U-Net → DenseNet models → Voting → Output

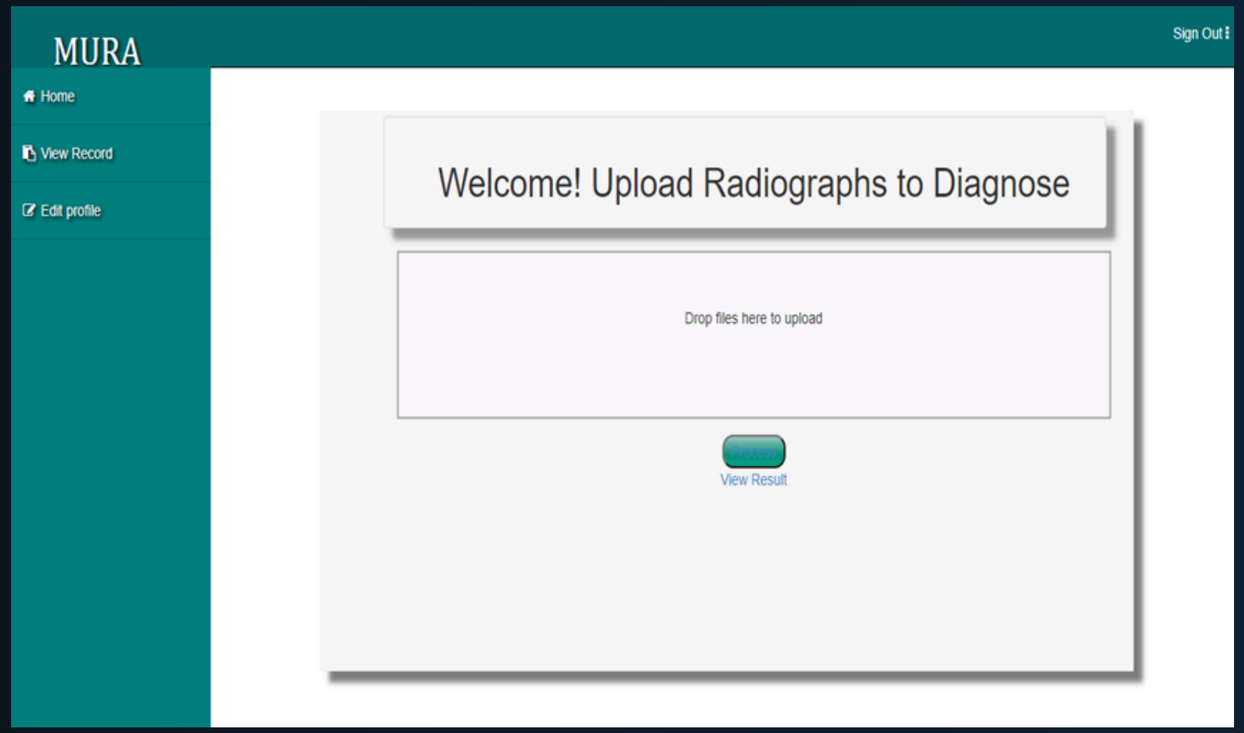
Models	Training Accuracy	Validation Accuracy	Testing Accuracy	Training loss	Validation loss	Testing loss
DensNet-169	0.88	0.87	0.83	0.3	0.4	0.42
DensNet-201	0.85	0.88	0.84	0.3	0.3	0.36
DensNet-121	0.89	0.85	0.82	0.2	0.4	0.47

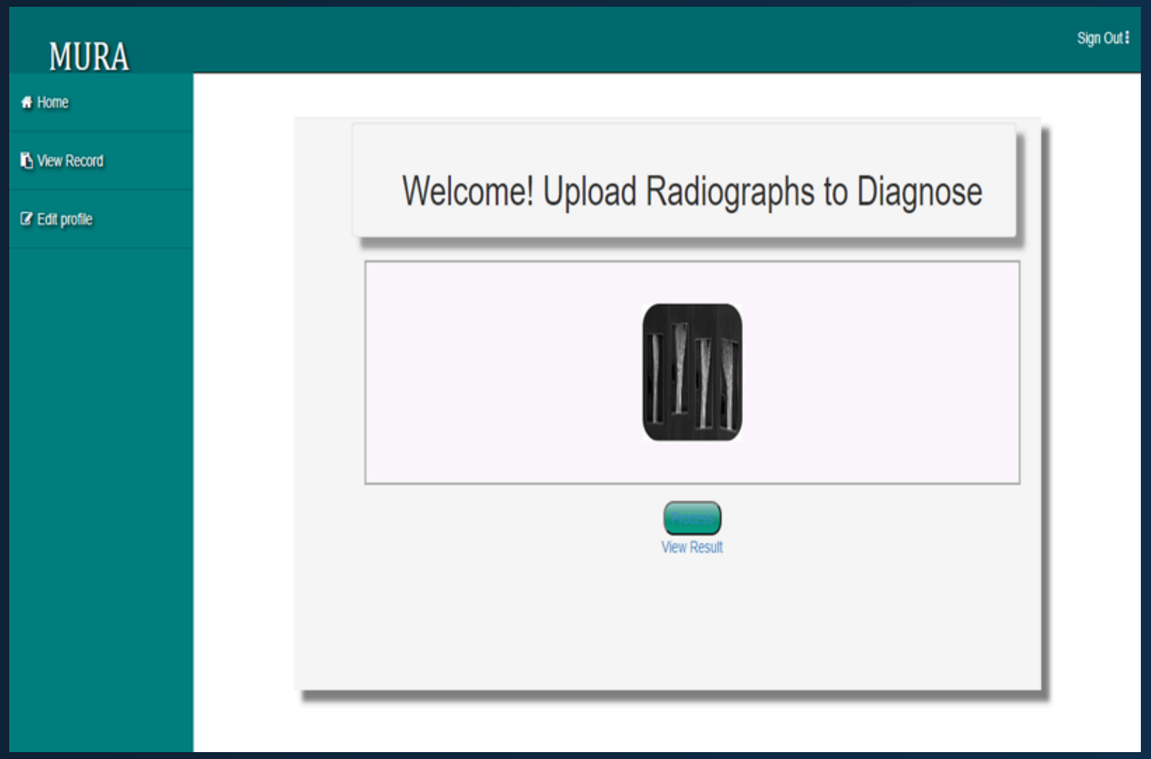
Product Demo





Product Demo





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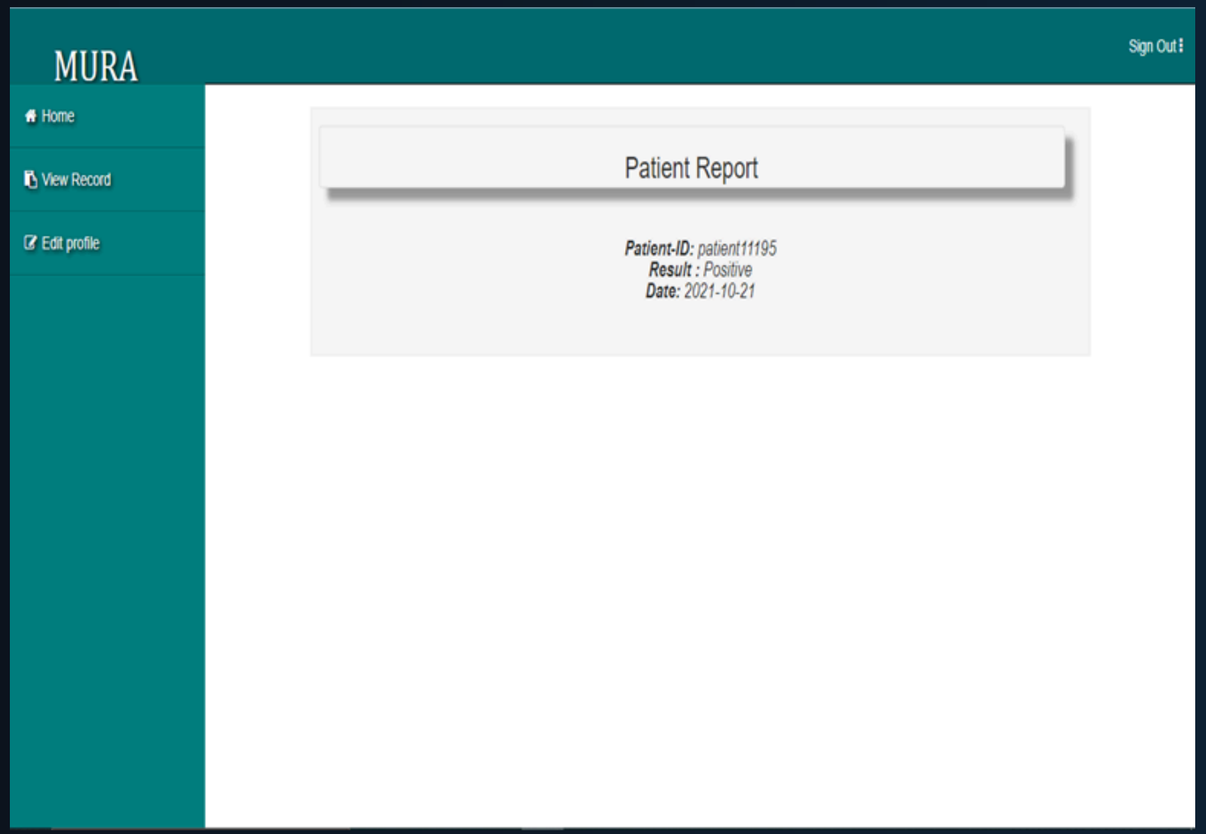

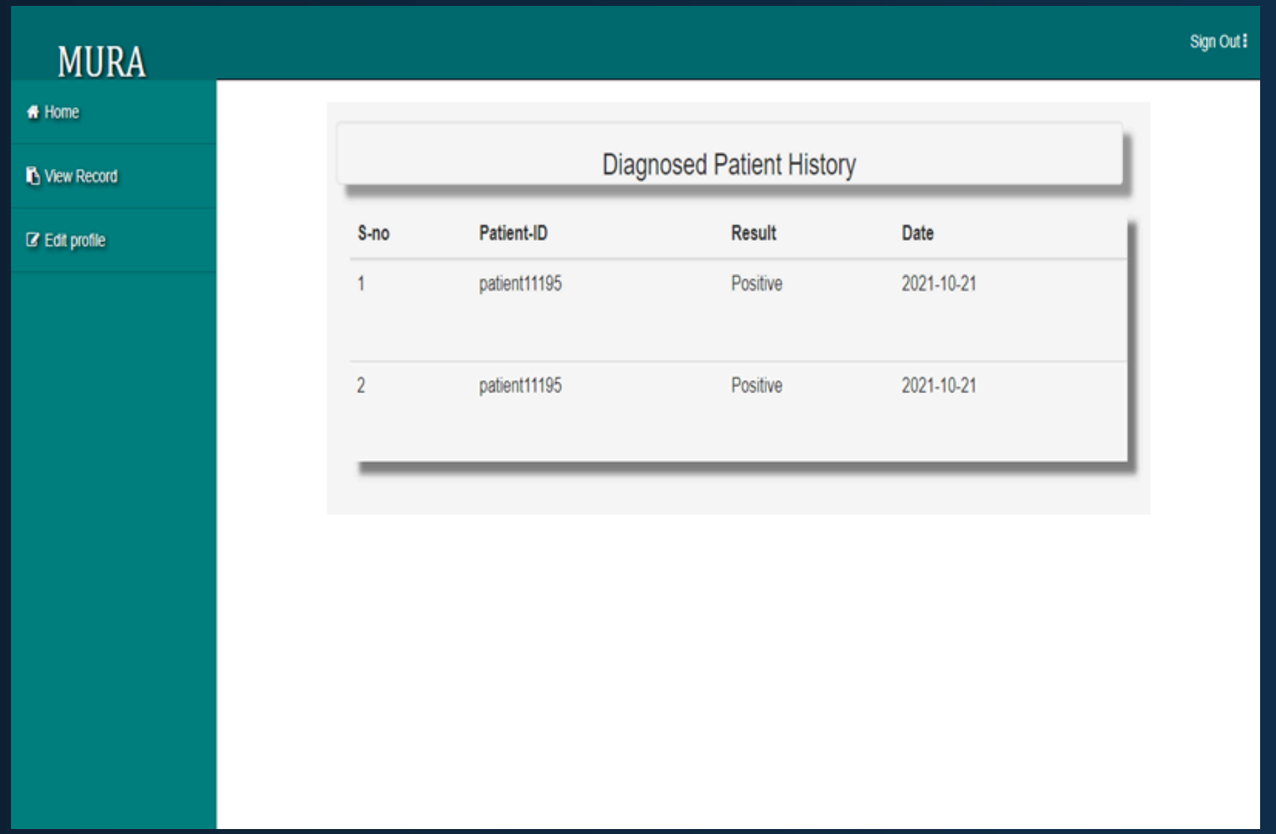

CFO

Mukhtor Eshimov

Financial Planning & Budgeting

- Initial $100K budget for 12 months; explore future VC, grants, and hospital partnerships.
- Tiered subscriptions (Start, Business, Pro); licensing options for hospitals and platforms.
  - **Start** -$5
  - **Business** - $30-50
  - **Pro** - $100-150
- AI liability claims, compliance costs; tax planning for grants & investments.

Financial Focus Areas

Proposed $100,000 Budget Allocation (Year 1)

Category	Description	Approx. Cost (USD)
Technical Staff	Developers, AI engineer, UI/UX	20,000
Salaries	PM,Marketing/Operations assistant	25,000
Office Costs	Small office, utilities, coworking if remote	6,000
Infrastructure	Servers, cloud (AWS/GCP), domain, tools (Notion, GitHub)	5,000
Marketing	Social media, ads, launch campaigns	21,000
Legal & Tax	Registration, legal review, IP/trademark	3,000
Emergency/Buffer	Unexpected costs, cash flow	20,000

Advisor Support & Competitor Pricing Insights

Financial Advisor

- Allocate $100,000 budget
- Design a tiered pricing model based on market analysis
- Estimate salaries, costs, and revenue projections
- Identify financial risks (legal, compliance, liability) and ways to mitigate them (insurance, legal reviews)
- Develop a realistic funding strategy for Year 1-2 through grants, investors, or partnerships

Competitors

◯ Zebra Medical Vision ◯ Viz.ai ◯ Aidoc provides AI solutions ◯ Qure.ai

CSO (Chief Sales Officer)

- We aim to partner with private and public clinics by offering them affordable, plug-and-play access to our AI diagnostics.
- Our B2B sales strategy focuses on building trust through pilot programs, medical conferences, and direct outreach to clinic networks.
- We also plan to collaborate with government healthcare initiatives to integrate our technology into the broader national healthcare system.

Go-To-Market Strategy

Content:

- Initiate Pilot Programs: Collaborate with Key Opinion Leaders (KOLs) in hospitals/clinics for validation and clinical evidence.

- Making agreements with medical university with the learning purposes of MRI scan
- Sponsoring medical competitions and offering health-tech grants or incubation support to others for funding and mentorship

Thank you!