Advancing **Diabetic Retinopathy** Detection for Enhanced Eye-Health

Pluridisciplinary Faculty of Nador - SDSI

Project proposed by our Pr. Anas EL ANSARI

Presented by

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July 8, 2023

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1.

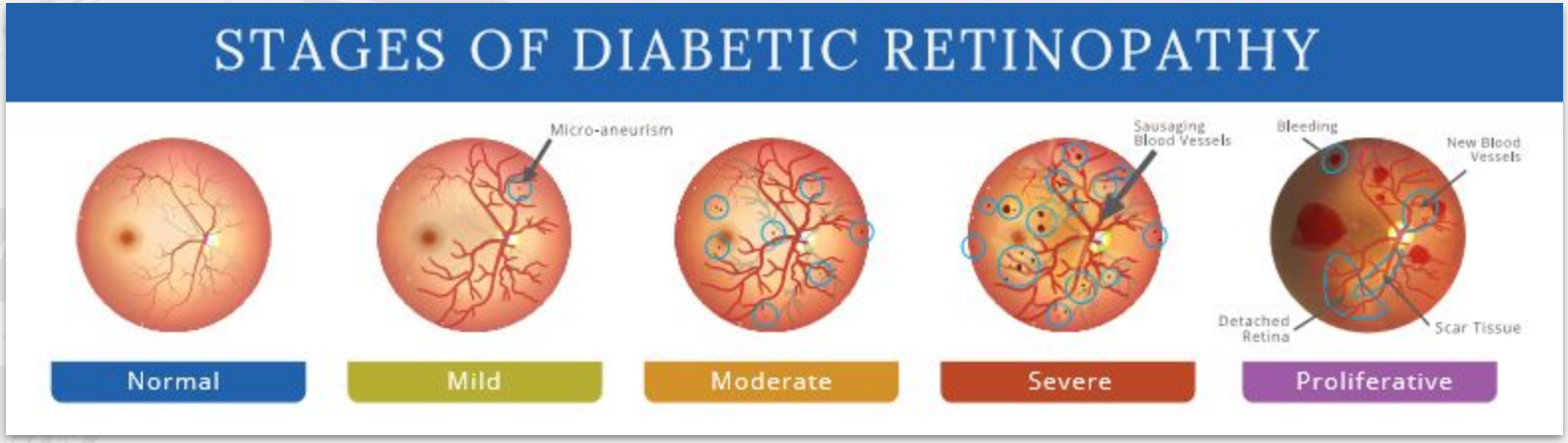
Diabetic Retinopathy Detection Introduction

By Issam SEDDIK

Diabetic Retinopathy Detection Introduction

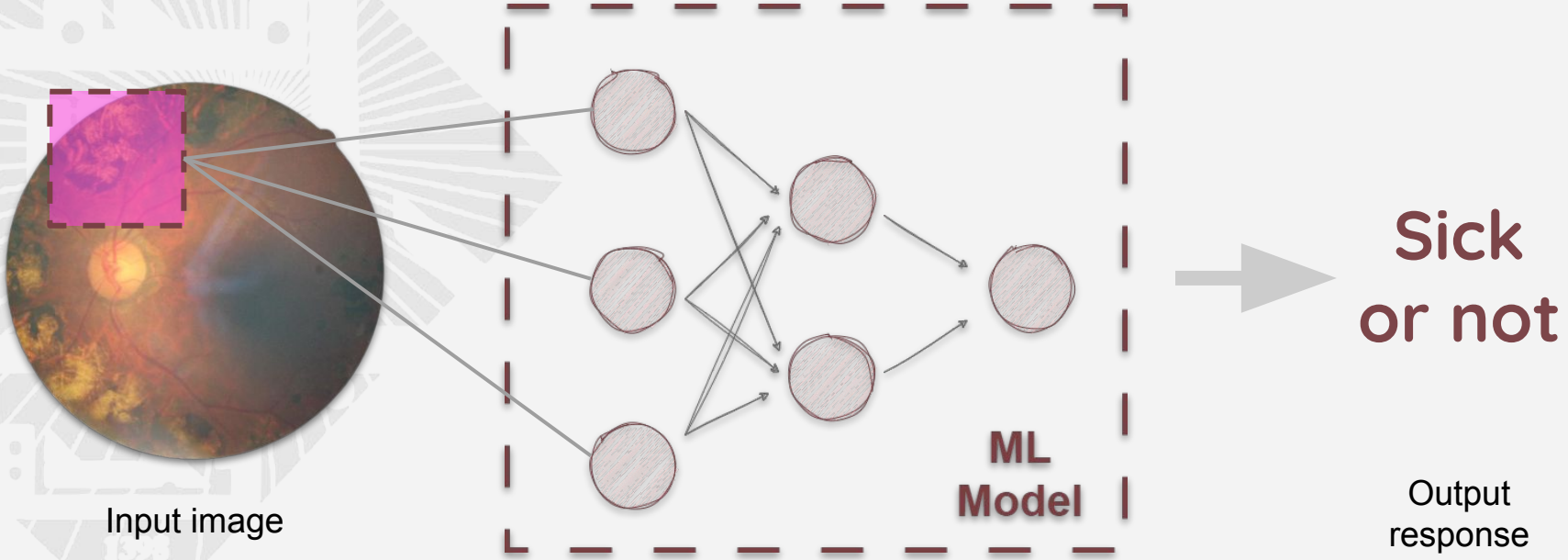
Problem Illustration

- Diabetic retinopathy is a serious eye condition that arises as a complication of diabetes mellitus and remains a significant cause of vision impairment and blindness worldwide.
- It affects the blood vessels in the retina, the light-sensitive tissue at the back of the eye responsible for vision.



Diabetic Retinopathy Detection Introduction

Goal



Diabetic Retinopathy Detection Introduction

Dataset Card

- The dataset contains radio images of both right and left eyes, sorted into five classes based on the severity of diabetic retinopathy (DR).
- The classes are represented as fallow: no signs of DR, Mild, Moderate, Severe, Proliferative DR

Dataset Id in kaggle amanneo/diabetic-retinopathy-resized-arranged

Dataset:

No signs of DR	Mild	Moderate	Severe	Proliferative DR
25810	2443	5292	873	708

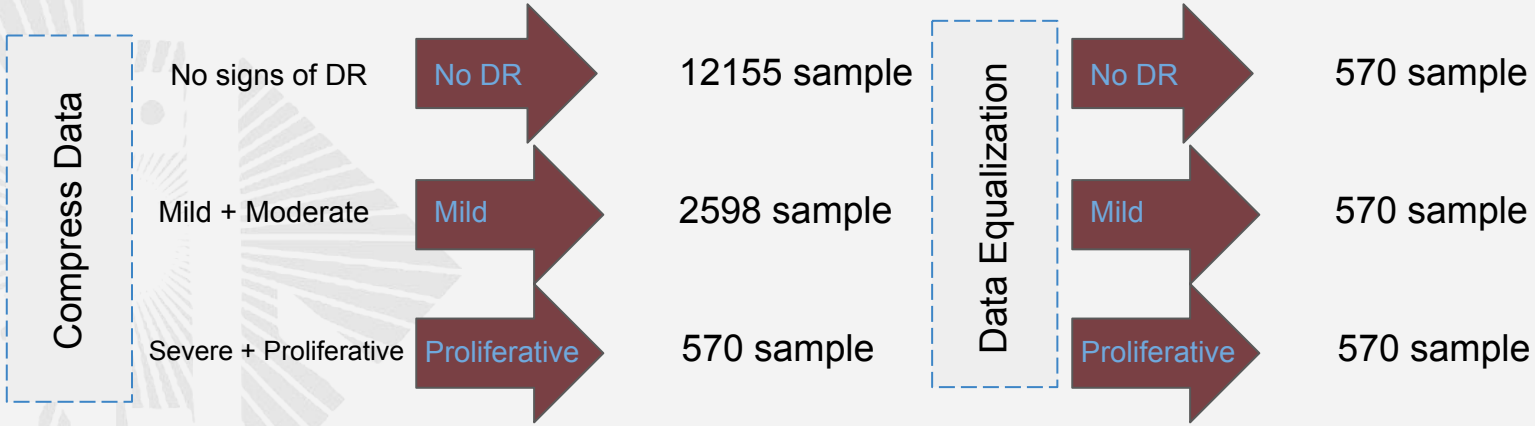
2.

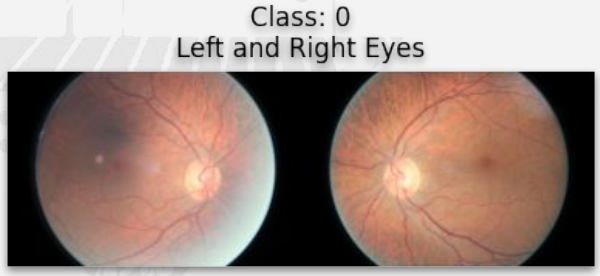
Data Understanding, Compression, and Equalization

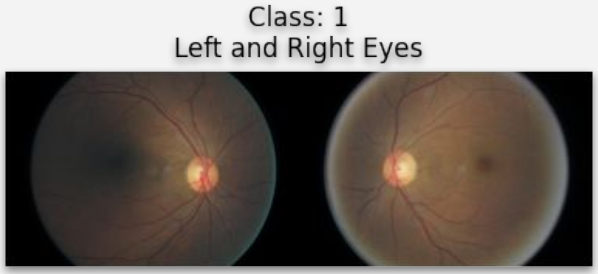
By Issam SEDDIK

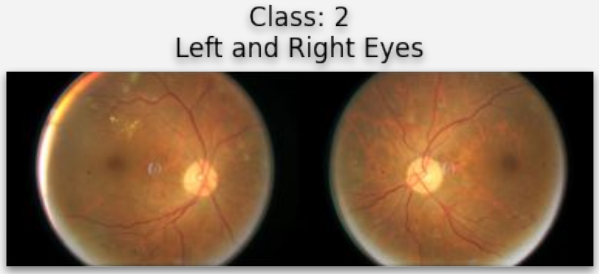
Data Understanding, Compression, and Equalization

Data Compression



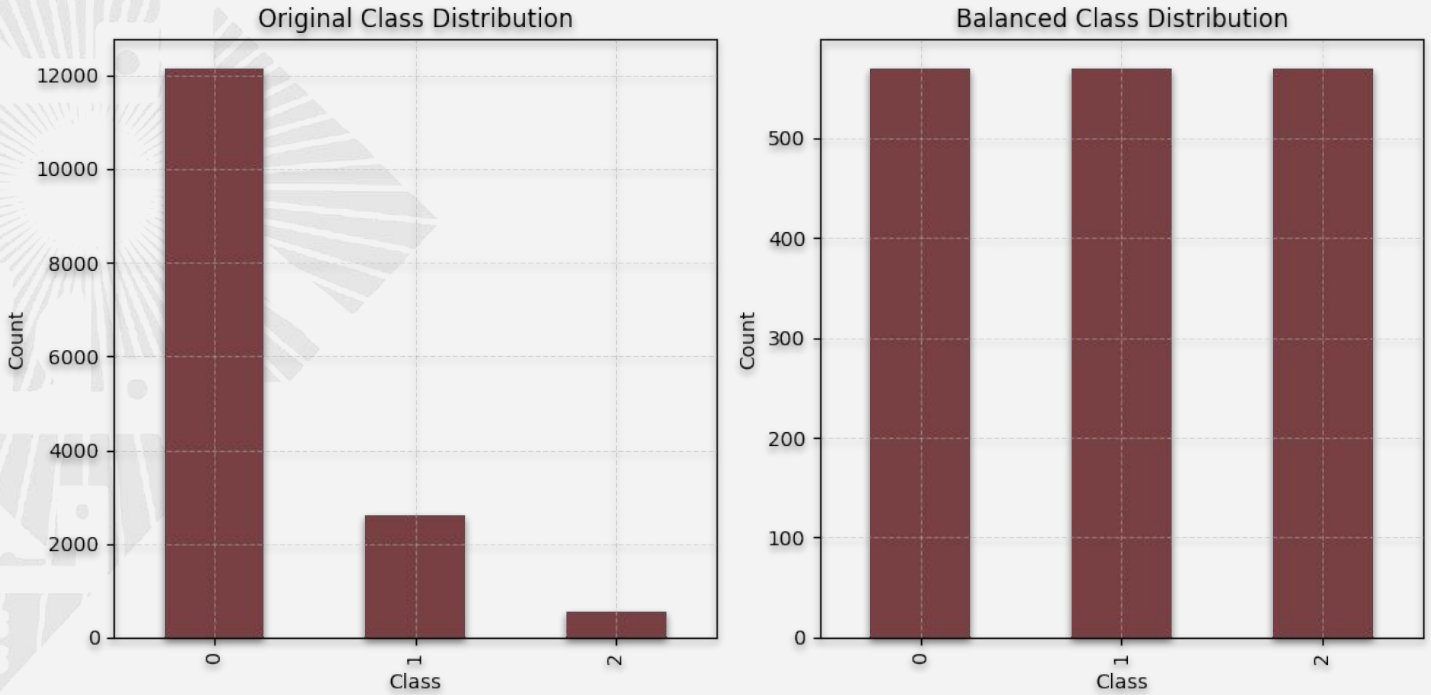






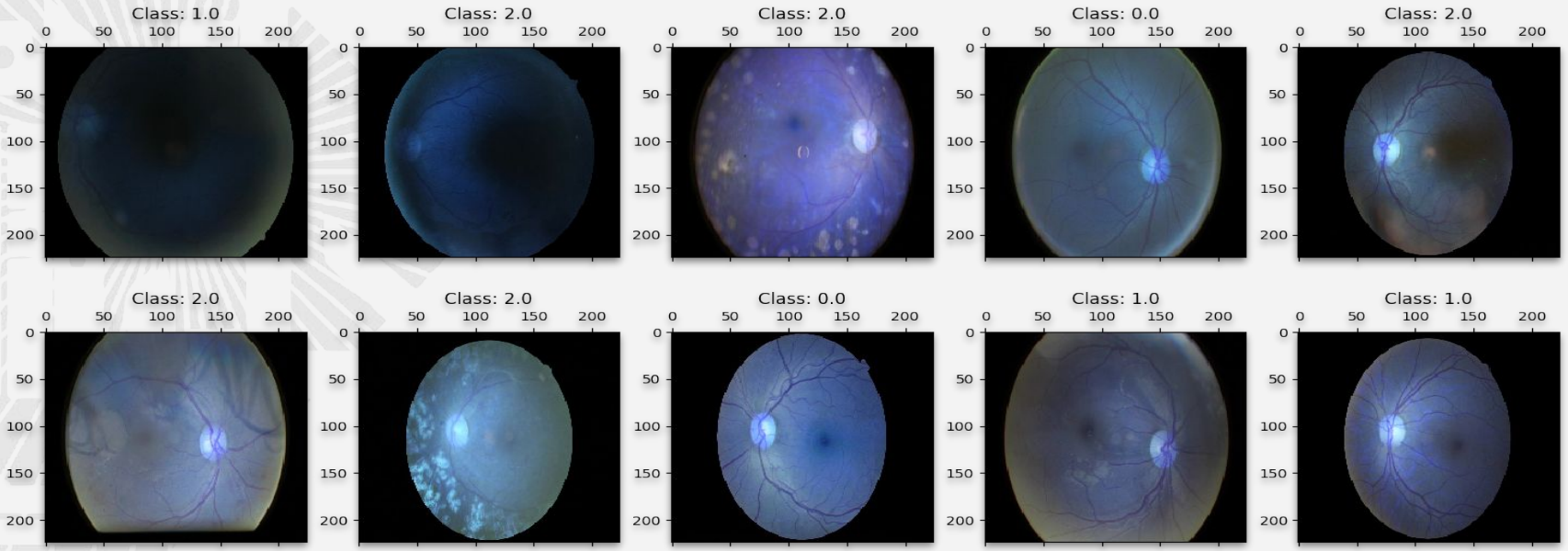
Data Understanding, Compression, and Equalization

Data Equalization



Data Understanding, Compression, and Equalization

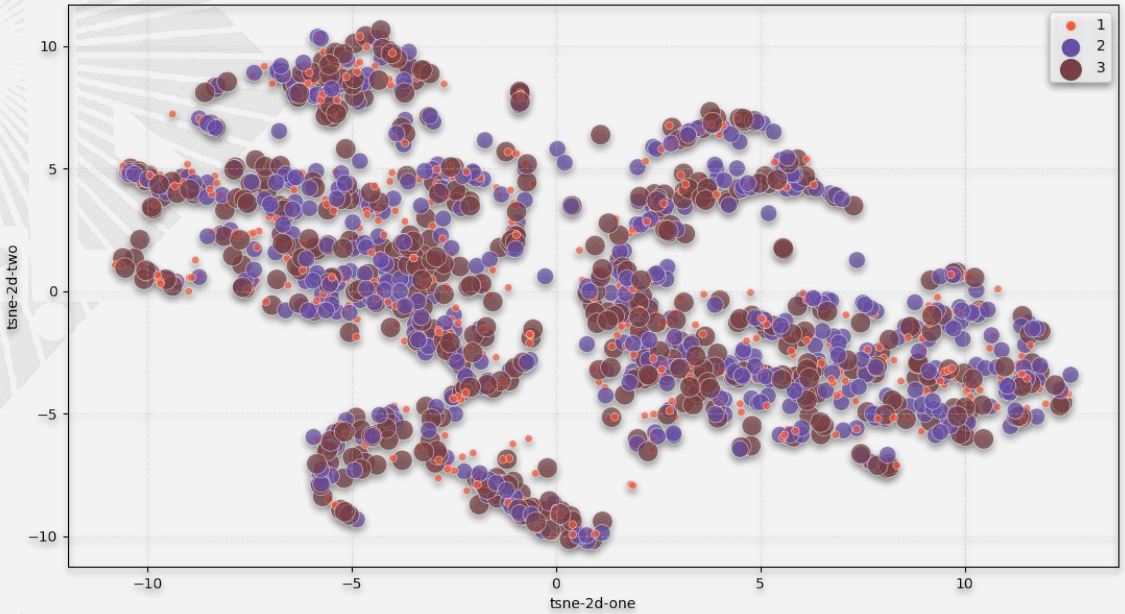
Random Sampling



Data Understanding, Exploration, and Pre-processing

Data Pre-processing

- Data visualisation using the T-SNE algorithm



3.

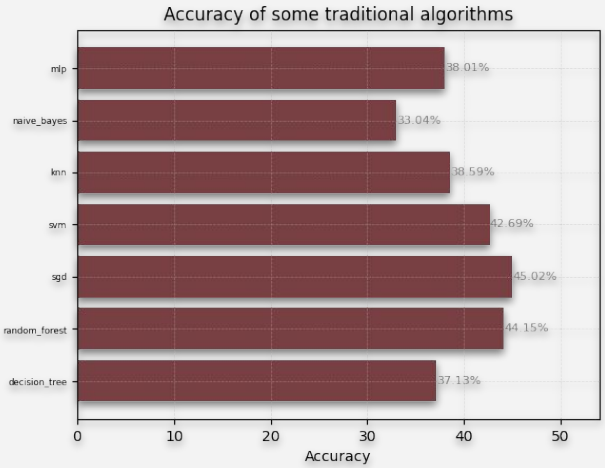
Model Evolution and Selection

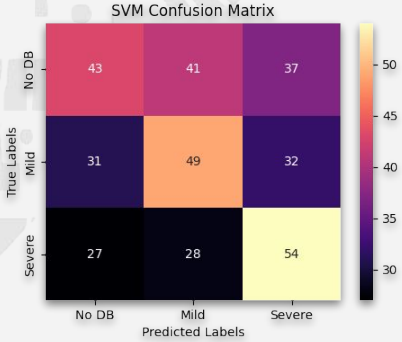
By Jamal BOUSSOUF

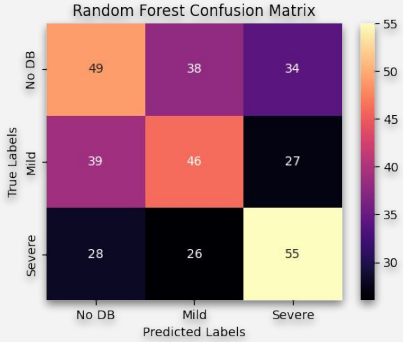
Model Evolution and Selection

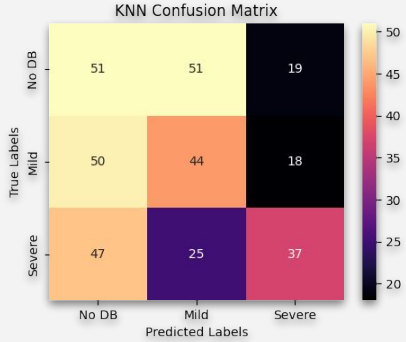
Traditional ML Algorithmes

- We have used various traditional ML algorithms to predict the case and these algorithms are not able to predict the case.





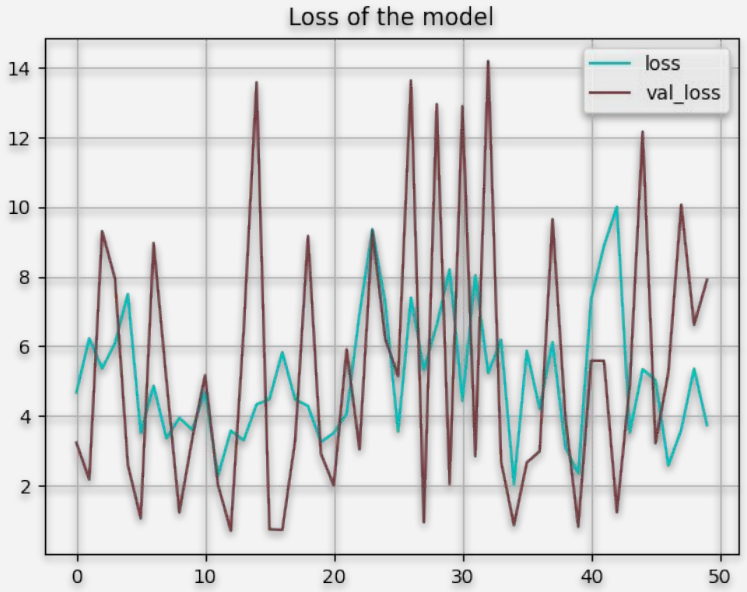




Model Evolution and Selection

ResNet Model Solution

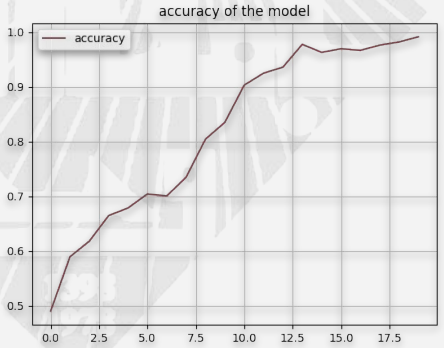
- We've also used a large-scale architecture, the ResNet Image architecture, but this doesn't deal with the problem as well as it could!

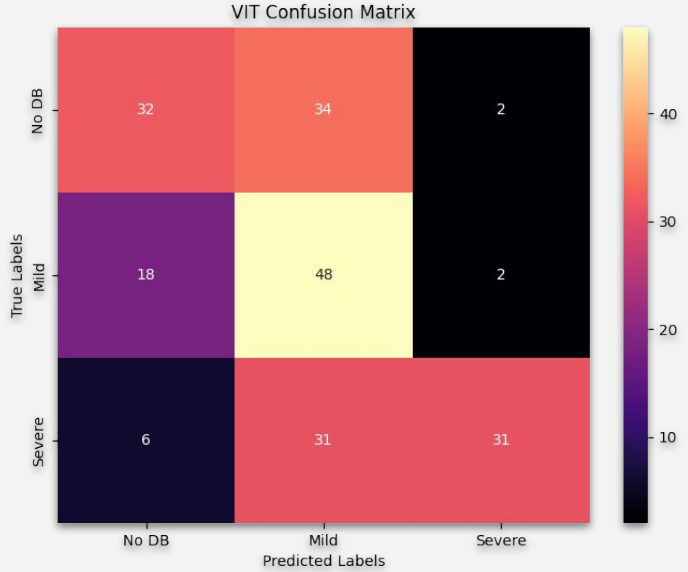


Model Evolution and Selection

VIT Model Solution

- Finally, we proceeded with the idea of ViT, which is the type of transformer technique that allows as to achieve better performance through the training phase!





98% / Training set
61% / Testing set

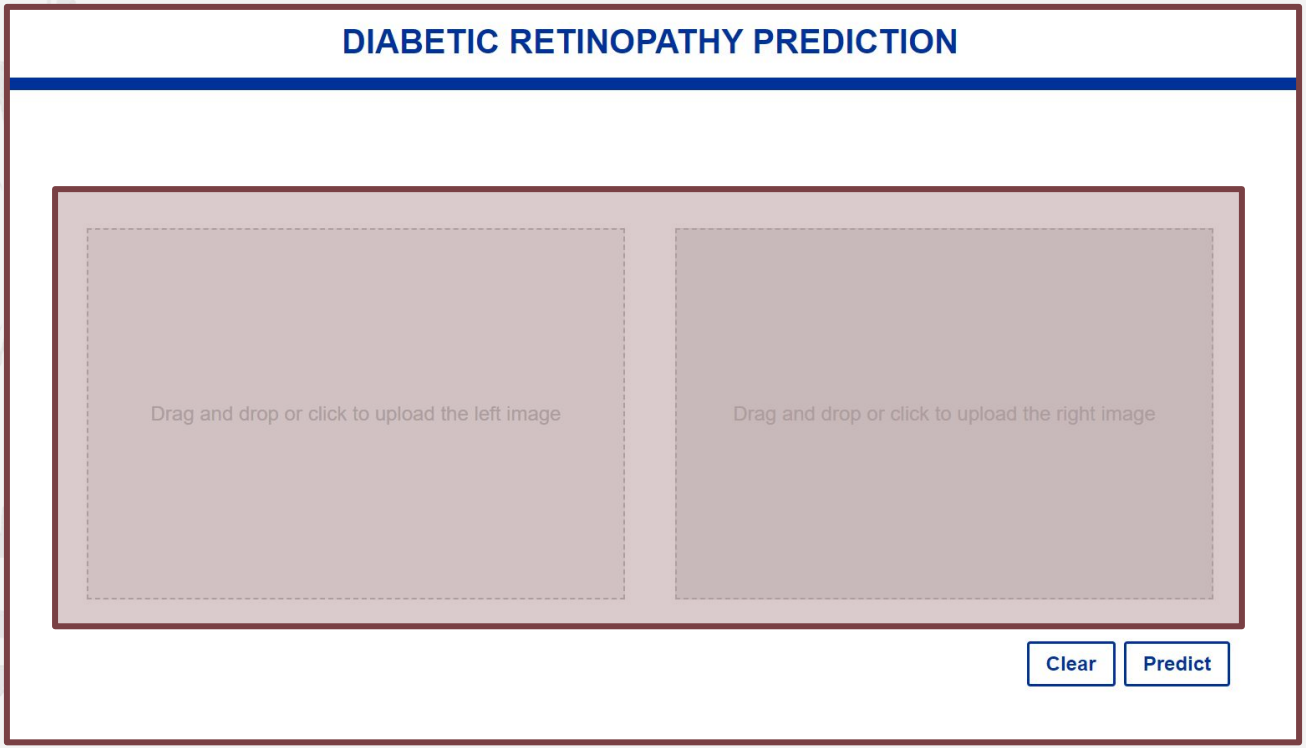
4.

Deployment and set-up

By Jamal BOUSSOUF

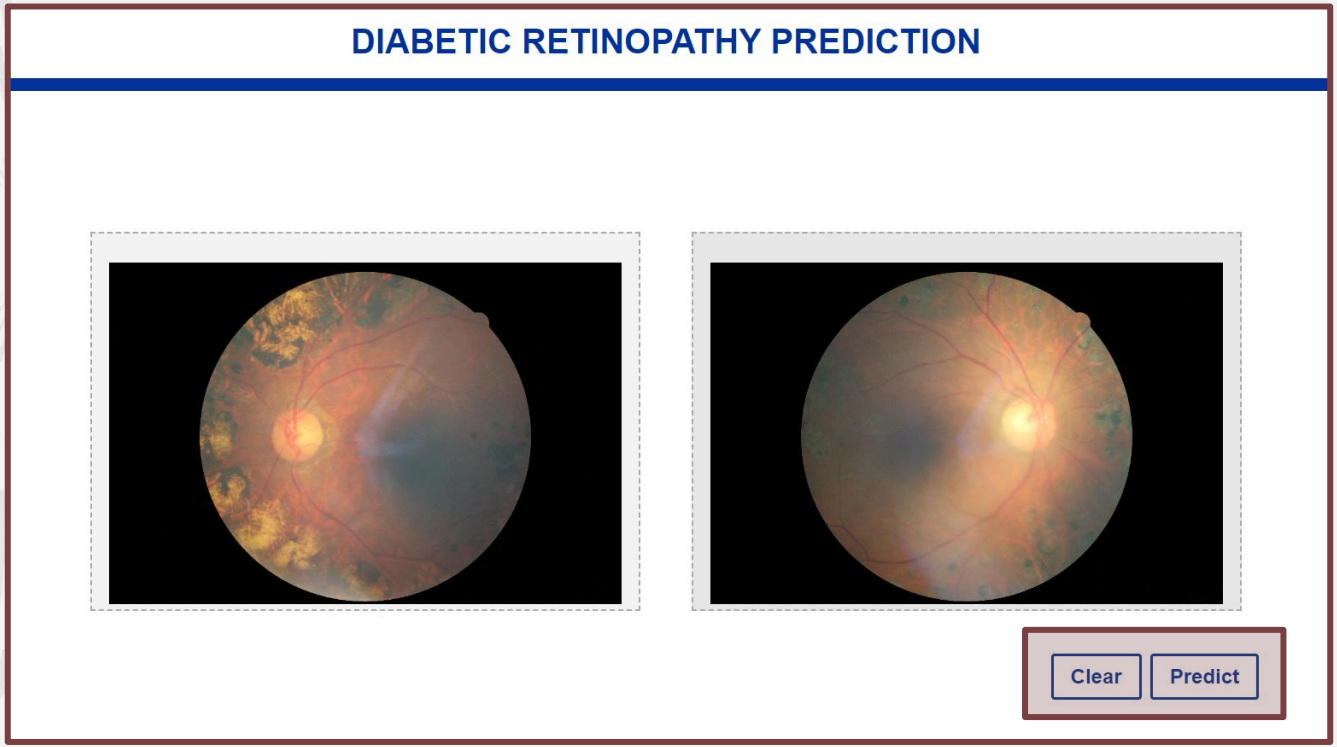
API Integration & Prompting with Large Models

API Integration



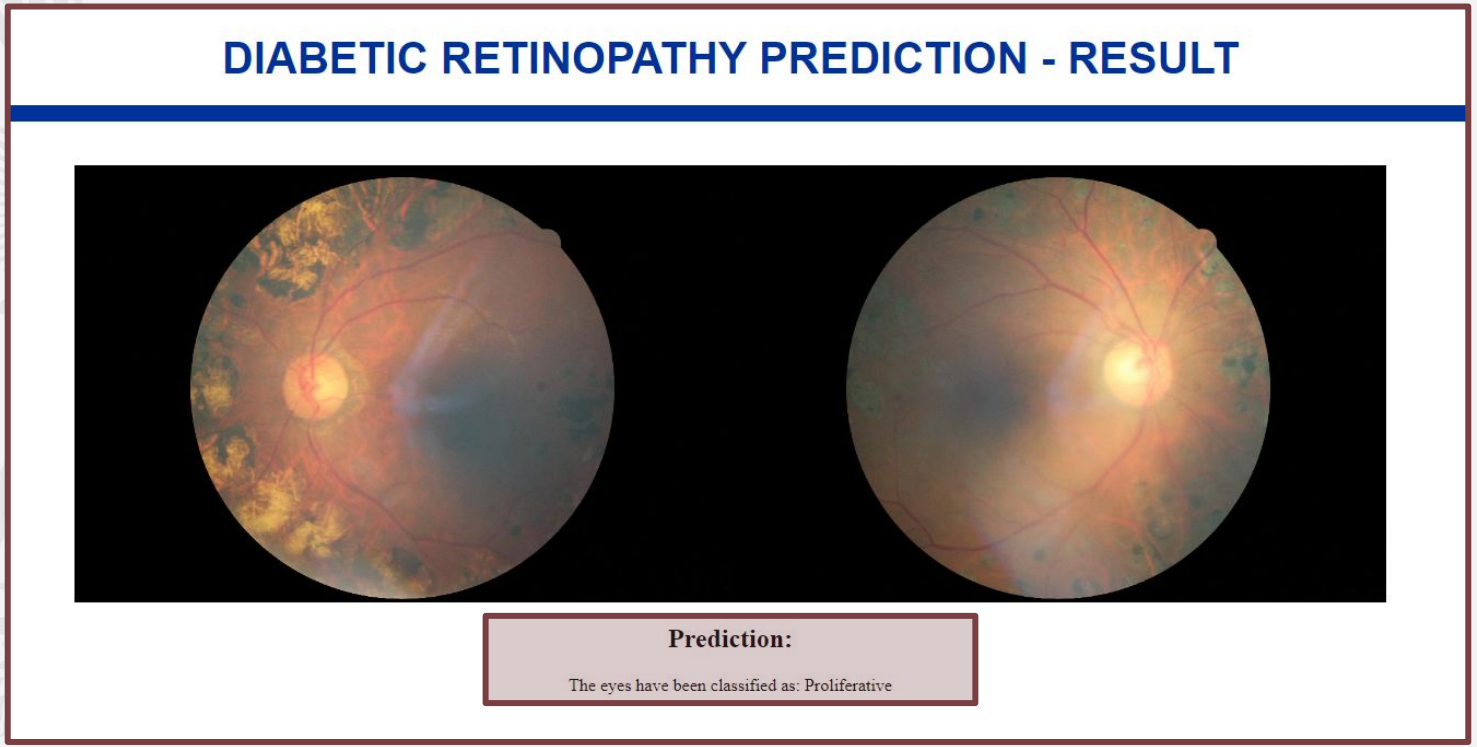
API Integration & Prompting with Large Models

Select LLM



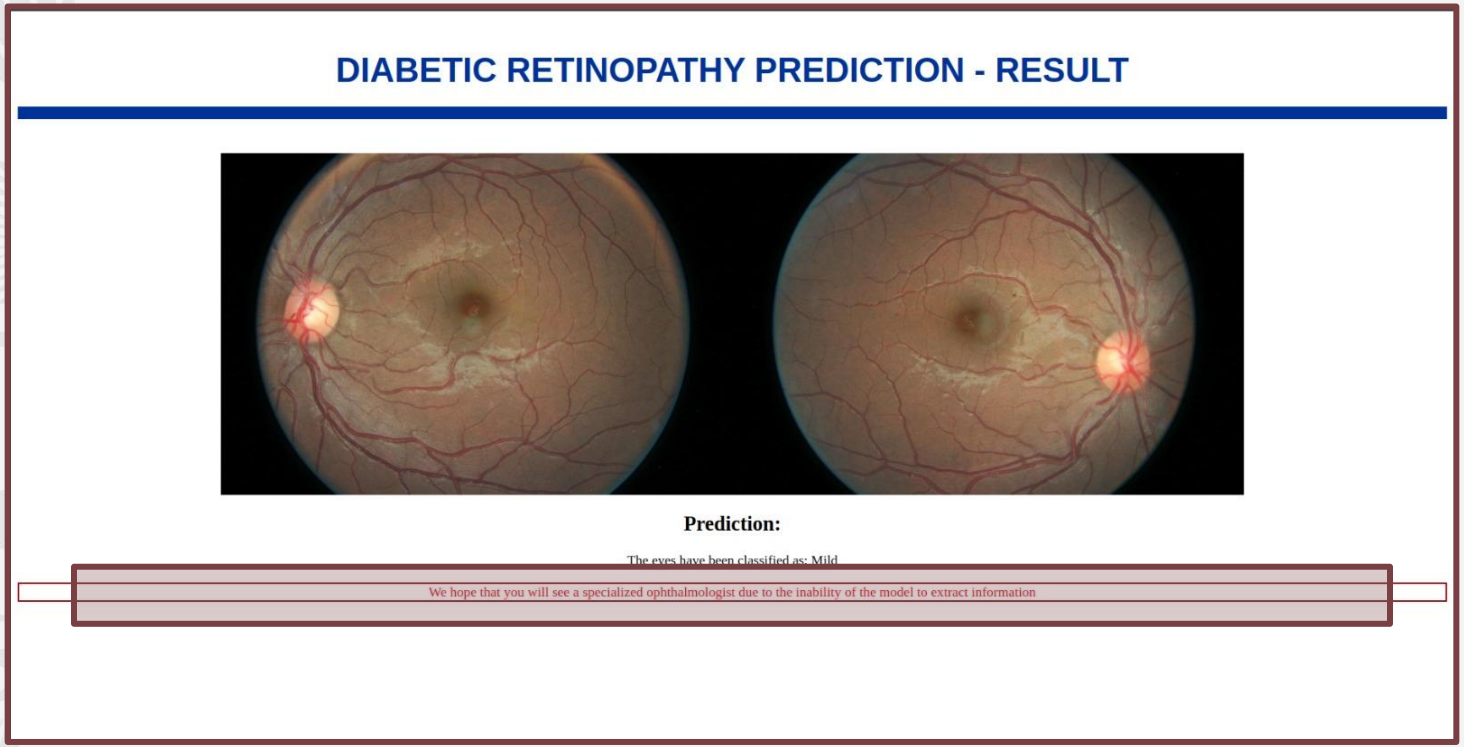
Chatbot Interface and Interactive Example

Chatbot interface



Chatbot Interface and Interactive Example

Chatbot interface



Interactive Illustration

5.

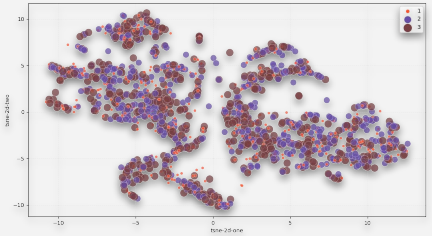
Conclusion

By Issam SEDDIK

Conclusion

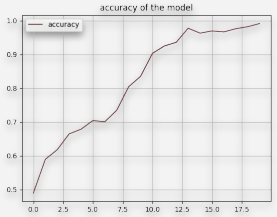
Data Understanding

➔ Understand the data as well as possible and prepare it to be a perfect input of our models.



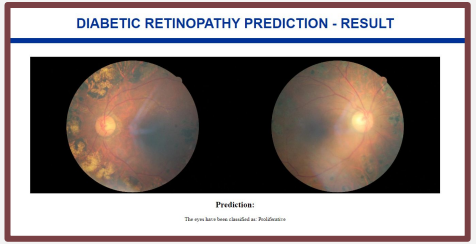
Modeling

➔ Find the better model that provide good performance.



Results

➔ Implement the desired **application.**



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Thank you!

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