

3/15/2022

Software Design Specification

SDS (FYP-2022)



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SUKKUR IBA UNIVERSITY KANDHKOT CAMPUS

Final Year Project Software Design Specification

For

COVID-19 Detection from X-Ray Images Using Self Attention Mechanism (Bachelor of Sciences in Computer Sciences)

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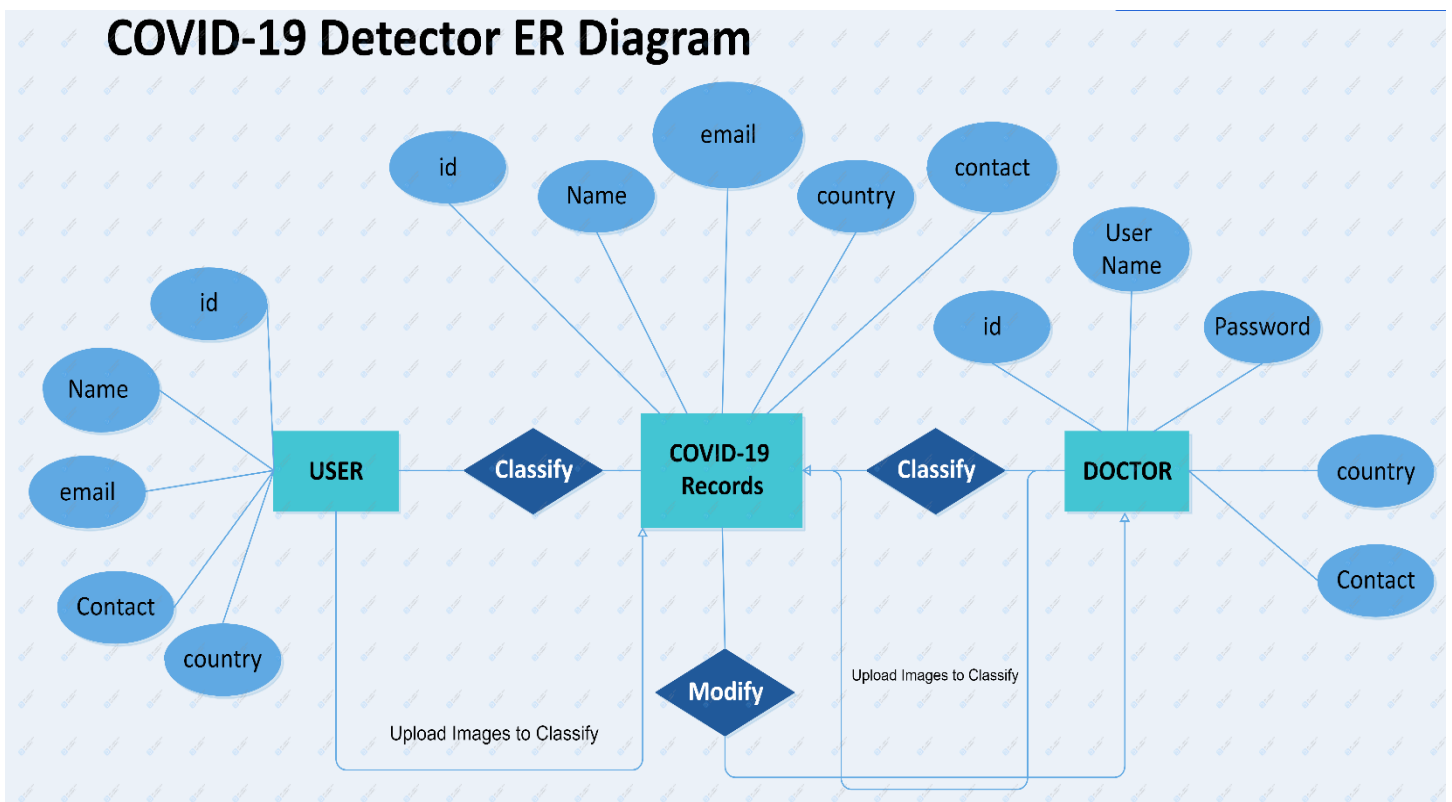
Introduction of Design Document

This is the Software Design Specification for COVID-19 Detection. This document will outline the software design and specification of our workflow task management system in addition to system architecture, system components, and software requirements.

This document will contain specifics about the design of our web application. It is a high level explanation of how the project will function, and which components will be developed to help it do so. This document will also serve to explain the technologies used to develop the website, as well as the user's interaction with various features.

Entity Relationship Diagram (ERD)

An entity–relationship model describes interrelated things of interest in a specific domain of knowledge. A basic ER model is composed of entity types and specifies relationships that can exist between entities.

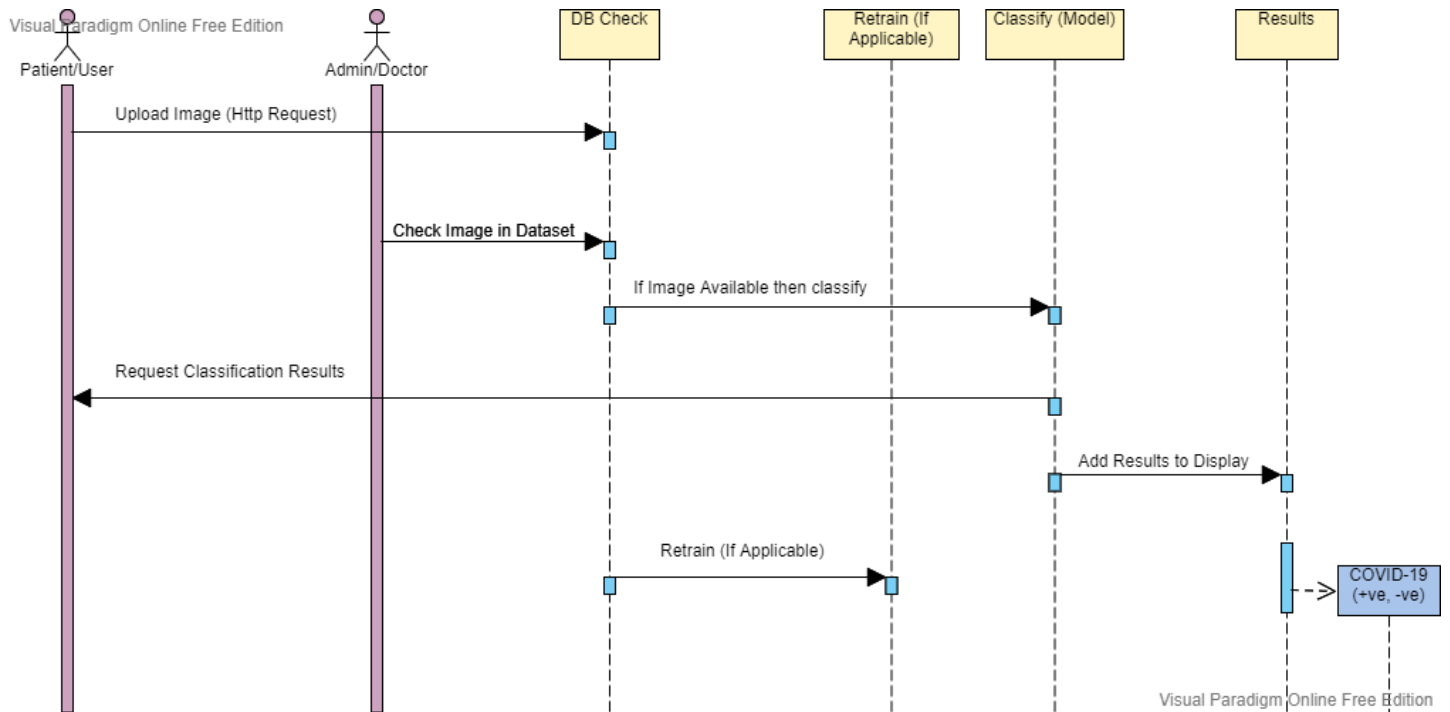


Sequence Diagram

UML Sequence Diagrams are interaction diagrams that detail how operations are carried out. They capture the interaction between objects in the context of a collaboration. Sequence Diagrams are time focus and they show the order of the interaction visually by using the vertical axis of the diagram to represent time what messages are sent and when.

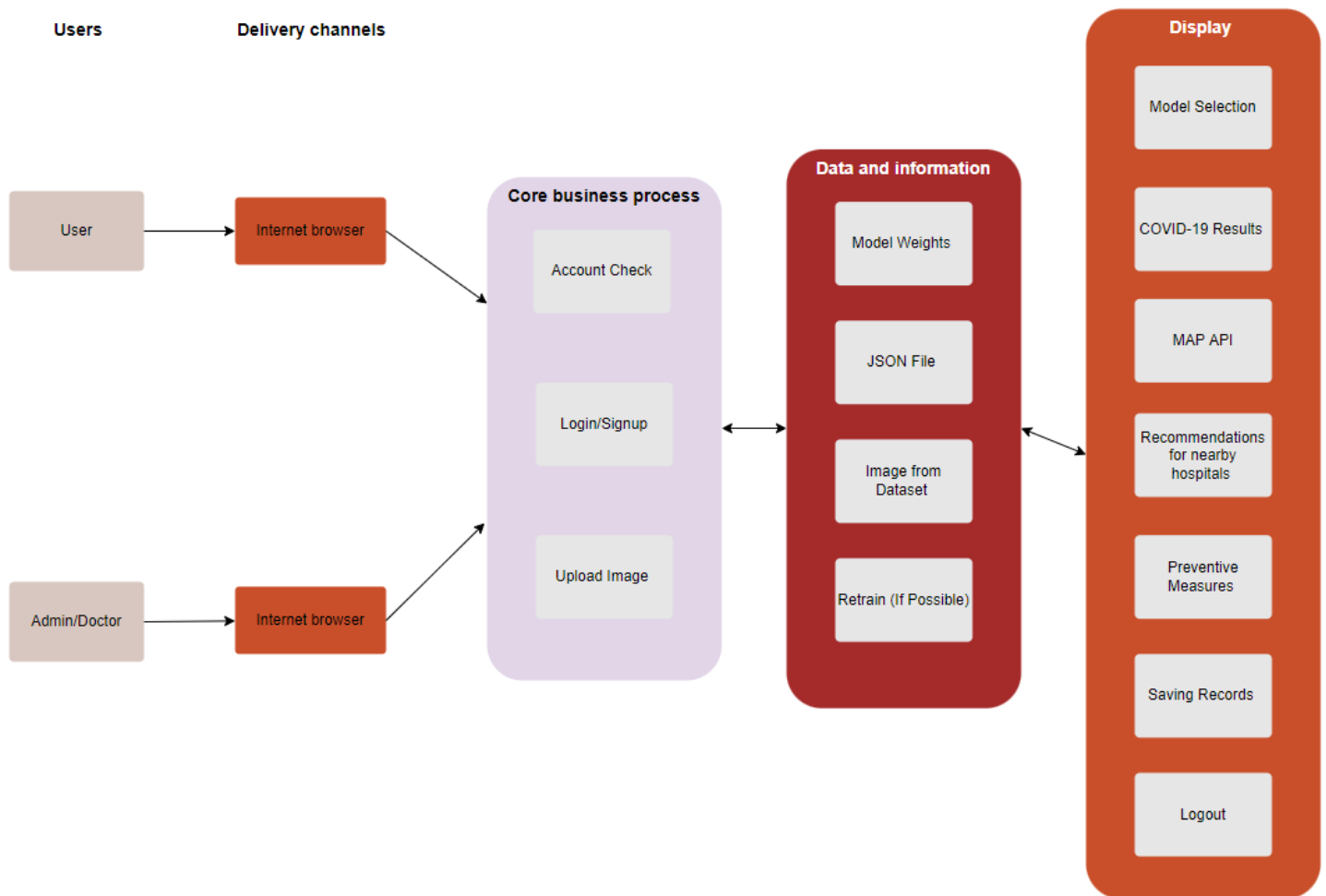
Sequence Diagrams captures:

1. The interaction that takes place in a collaboration that either realizes a use case or an operation (instance diagrams or generic diagrams)
2. High-level interactions between user of the system and the system, between the system and other systems, or between subsystems (sometimes known as system sequence diagrams)



Architectural Design Diagram

An architectural diagram is a diagram of a system that is used to abstract the overall outline of the software system and the relationships, constraints, and boundaries between components. It is an important tool as it provides an overall view of the physical deployment of the software system and its evolution roadmap.

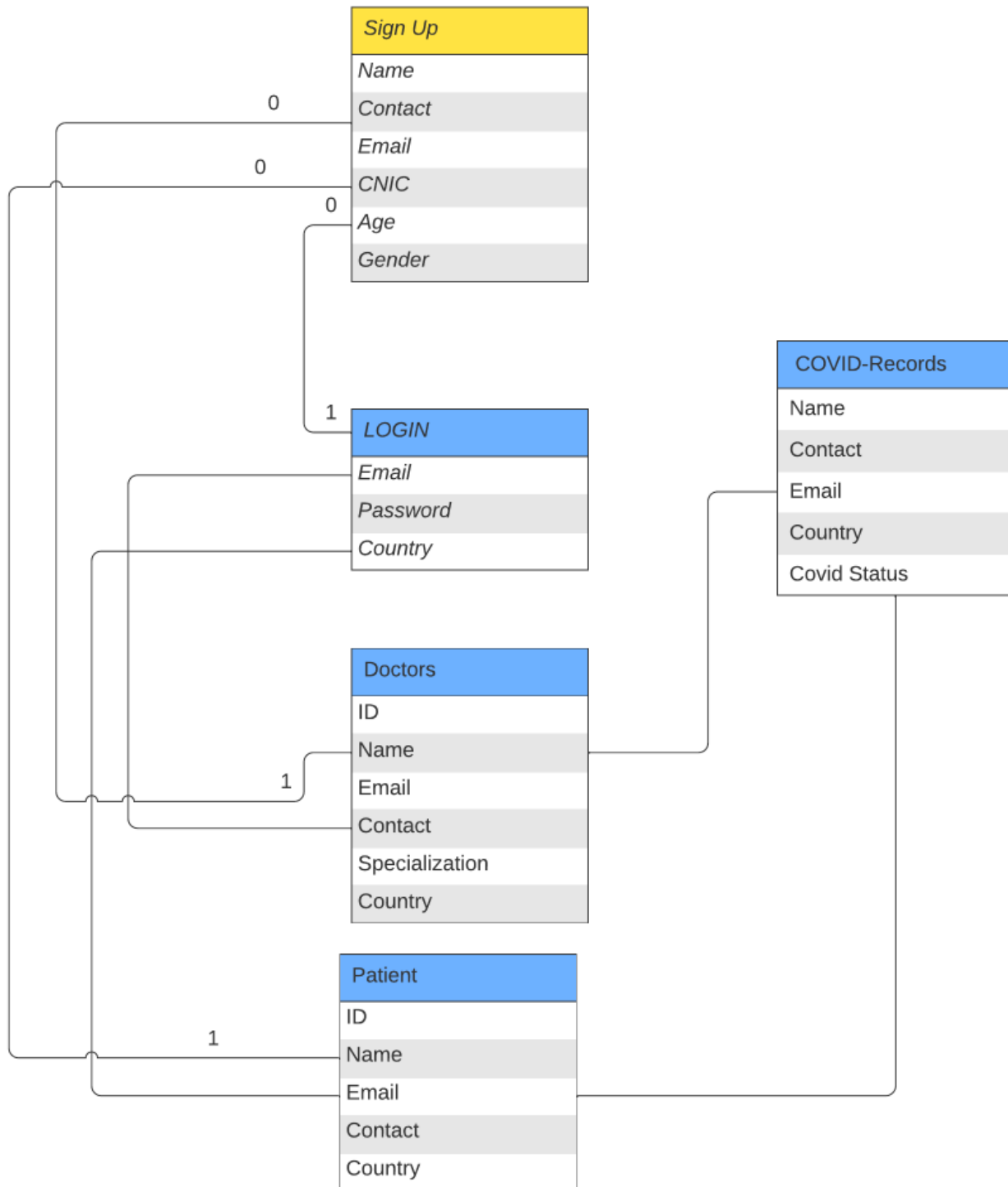


Database Diagram

A database diagram is the very foundation of a database design and development effort. It represents the basic structure of a database; how information is stored, categorized and managed within it.

Database Design COVID-19 Detector

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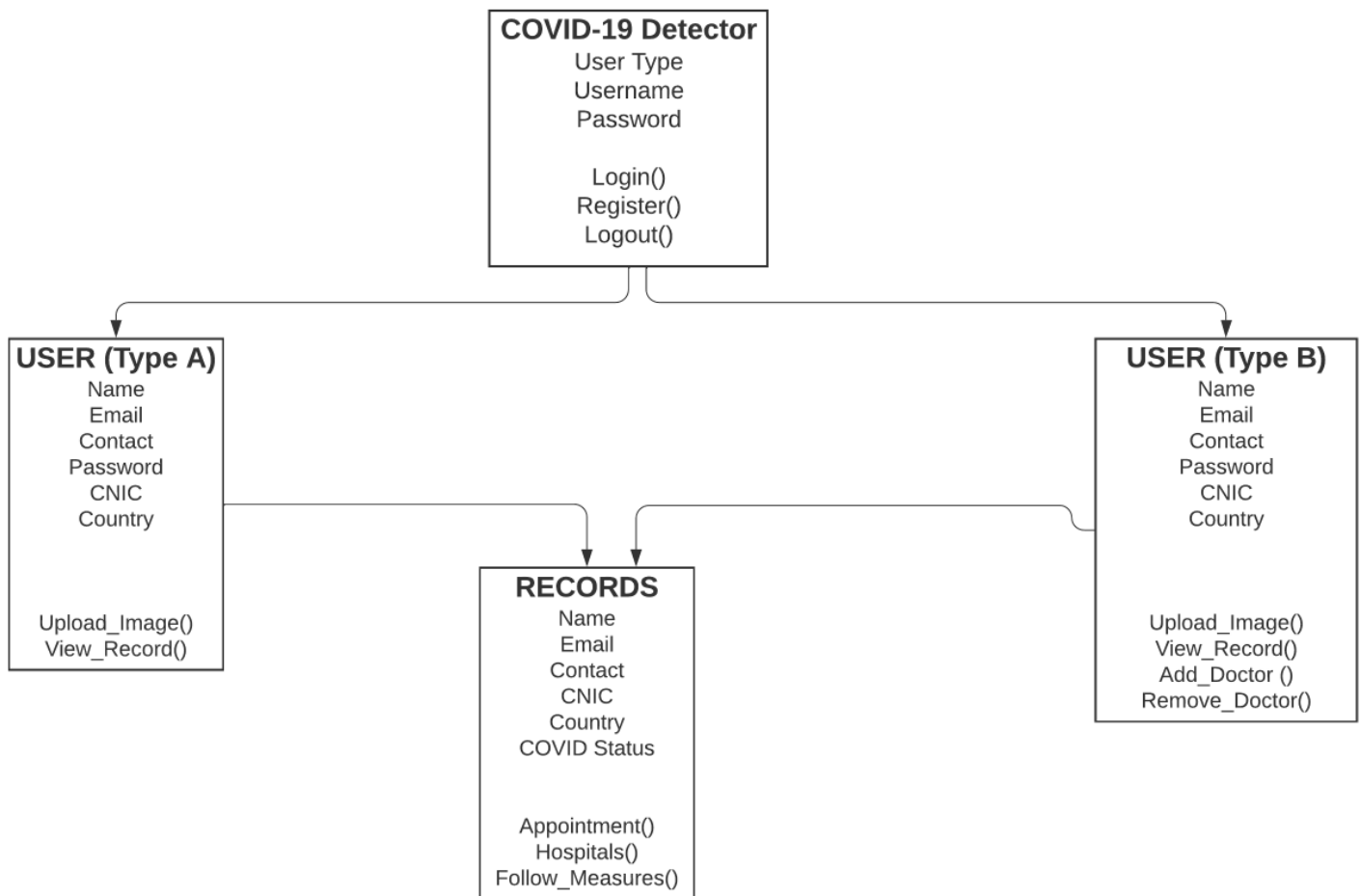


Class Diagram

The class diagram is the main building block of object-oriented modeling. It is used for general conceptual modeling of the structure of the application, and for detailed modeling, translating the models into programming code. Class diagrams can also be used for data modeling.

UML class

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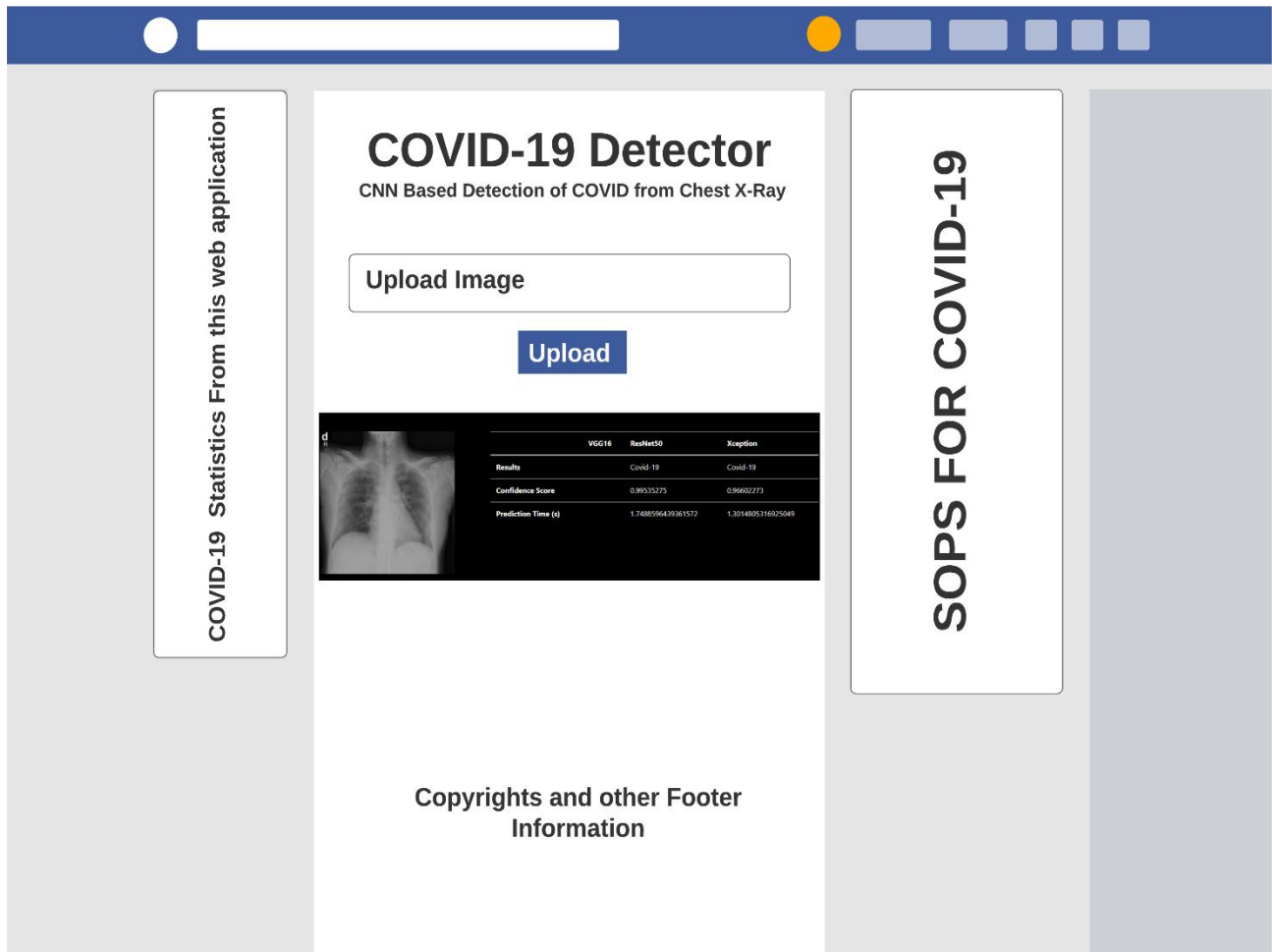


Interface Design


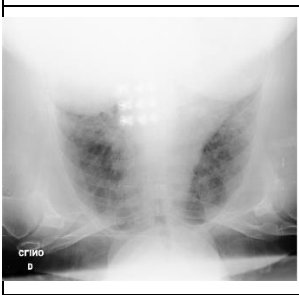




A user interface diagram is an important tool in software engineering. It allows you to communicate UI ideas to your customer or end-user before investing time in programming. Software Ideas Modeler offers tools that help you to create user interface designs very fast.

Website blockframe example

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Test Cases

	ResNet 50	Xception
	Prediction (ResNet50): Covid-19 Confidence Score (ResNet50) : 0.9983456 Prediction Time (ResNet50) : 1.7731642723083496	Prediction (Xception): Covid-19 Confidence Score (Xception) : 0.87923443 Prediction Time (Xception) : 1.335954189300537
	Prediction (ResNet50): Covid-19 Confidence Score (ResNet50) : 0.99563736 Prediction Time (ResNet50) : 1.6085076332092285	Prediction (Xception): Covid-19 Confidence Score (Xception) : 0.9616151 Prediction Time (Xception) : 1.4532620906829834
	Prediction (ResNet50): Covid-19 Confidence Score (ResNet50) : 1.0 Prediction Time (ResNet50) : 1.6720921993255615	Prediction (Xception): Covid-19 Confidence Score (Xception) : 0.9930113 Prediction Time (Xception) : 1.497863531112671
	Prediction (ResNet50): Non Covid-19 Confidence Score (ResNet50) : 0.9313257 Prediction Time (ResNet50) : 1.605485439300537	Prediction (Xception): Non Covid-19 Confidence Score (Xception) : 0.9649221 Prediction Time (Xception) : 1.4670178890228271
	Prediction (ResNet50): Non Covid-19 Confidence Score (ResNet50) : 0.99993813 Prediction Time (ResNet50) : 1.6318886280059814	Prediction (Xception): Non Covid-19 Confidence Score (Xception) : 0.9899961 Prediction Time (Xception) : 1.4744694232940674
	Prediction (ResNet50): Non Covid-19 Confidence Score (ResNet50) : 0.9989675 Prediction Time (ResNet50) : 1.5814366340637207	Prediction (Xception): Non Covid-19 Confidence Score (Xception) : 0.99070203 Prediction Time (Xception) : 1.464524745941162

COVID-19 Detector


CNN Based Detection of COVID from Chest X-Ray

Upload Image

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Solve



	VGG16	ResNet50	Xception
Results		Non Covid-19	Non Covid-19
Confidence Score		0.99993813	0.9899961
Prediction Time (s)		1.6318886230059814	1.4744694232940674

COVID-19 Detector


CNN Based Detection of COVID from Chest X-Ray

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Solve



	VGG16	ResNet50	Xception
Results		Non Covid-19	Non Covid-19
Confidence Score		0.9989675	0.99070203
Prediction Time (s)		1.5814366340637207	1.464524745941162

COVID-19 Detector


CNN Based Detection of COVID from Chest X-Ray

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Solve



	VGG16	ResNet50	Xception
Results		Covid-19	Covid-19
Confidence Score		0.9983456	0.87923843
Prediction Time (s)		1.7731642723083496	1.335954189300537

COVID-19 Detector


CNN Based Detection of COVID from Chest X-Ray

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	VGG16	ResNet50	Xception
Results		Covid-19	Covid-19
Confidence Score		0.99563736	0.9616151
Prediction Time (s)		1.6085076332087285	1.4513620906879834

COVID-19 Detector

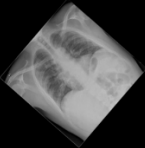
CNN Based Detection of COVID from Chest X-Ray

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Solve



	VGG16	ResNet50	Xception
Results		Covid-19	Covid-19
Confidence Score		1.0	0.9930113
Prediction Time (s)		1.6720921993255615	1.497862531112671

COVID-19 Detector


CNN Based Detection of COVID from Chest X-Ray

Upload Image

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No file chosen

Solve



	VGG16	ResNet50	Xception
Results		Non Covid-19	Non Covid-19
Confidence Score		0.9313257	0.9649221
Prediction Time (s)		1.6054805493308527	1.4670178892292771