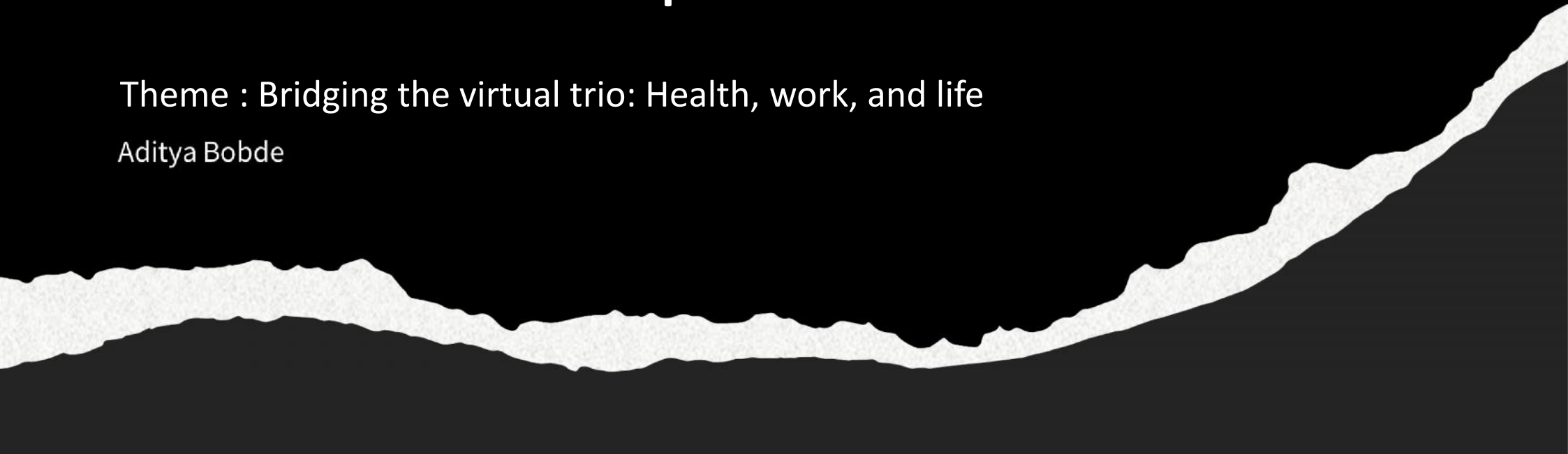# Innovaccer's HackerCamp'22

Theme : Bridging the virtual trio: Health, work, and life

Aditya Bobde

Problem statement

Multiple Diseases Predicting Deep-learning Model using Chest X-Ray / CT-Scan Images

Current Challenges Proposed Solution in Tackling:

Burden on healthcare systems

Lack of rapid disease prediction

None can be expert of all

No cost and user friendly solution

Poor healthcare in under-resourced areas

Solution

Creating an AI enabled website to predict diseases from X-Rays:

Predict from 21 Lung Diseases backed by **DL models**

Multilingual Bot to answer most of the questions

Shows **Nearby Doctors** to diagnosed patients

Specialized Models making **Explainable Results**

Scalable to other diseases depending on data availability

Lightning Fast and **Reliable** predictions

Frameworks/Technologies stacks to be used
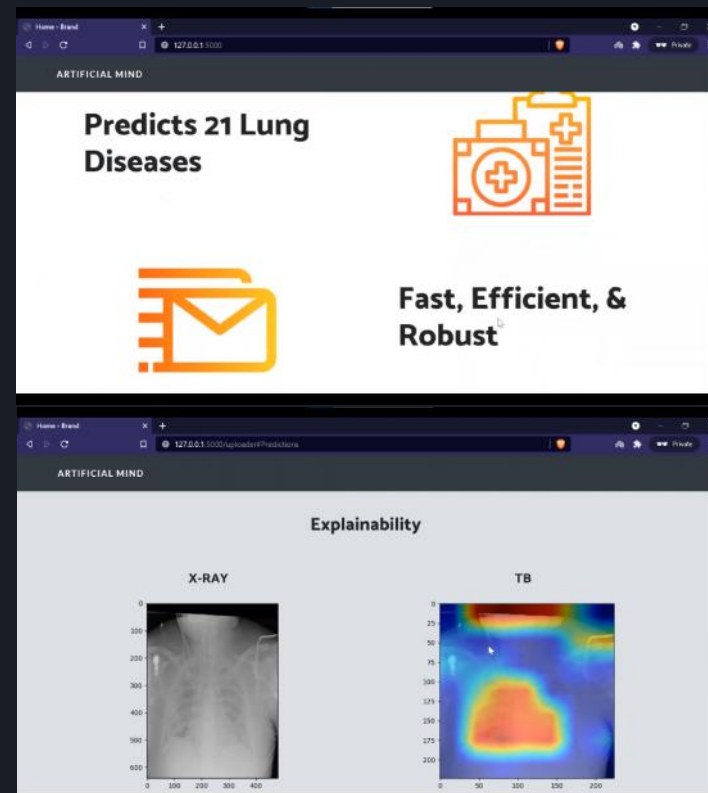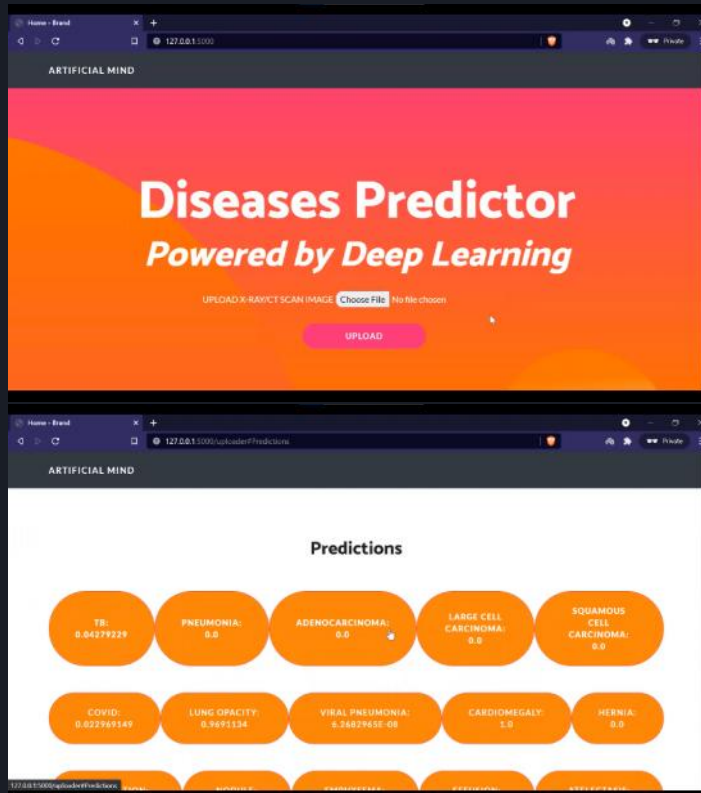
Python
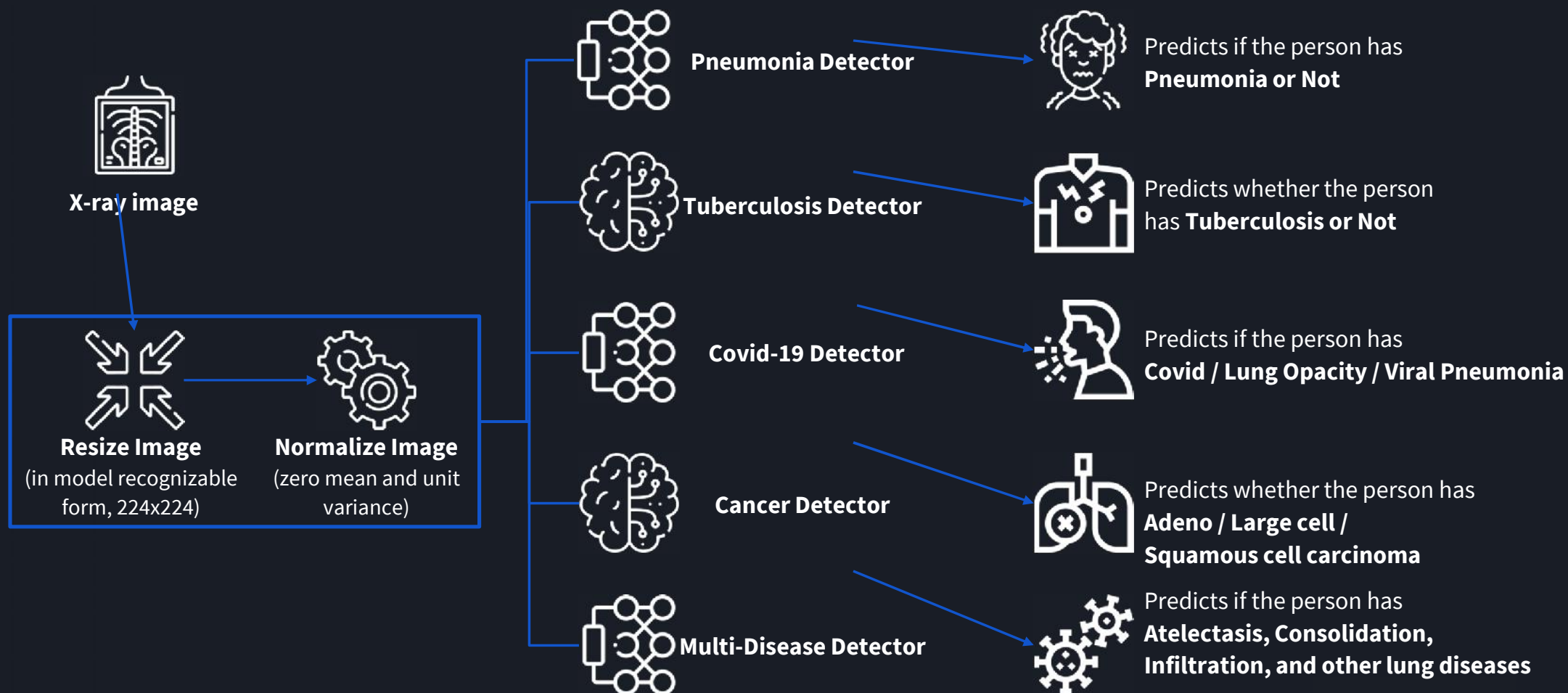
Microsoft Azure

Flask

TensorFlow

Demo of working prototype

Check out prototype in action : Click Here

Screenshots :

Methodology / Architecture diagram

X-ray image

Resize Image
(in model recognizable form, 224x224)

Normalize Image
(zero mean and unit variance)

Pneumonia Detector → Predicts if the person has **Pneumonia or Not**

Tuberculosis Detector → Predicts whether the person has **Tuberculosis or Not**

Covid-19 Detector → Predicts if the person has **Covid / Lung Opacity / Viral Pneumonia**

Cancer Detector → Predicts whether the person has **Adeno / Large cell / Squamous cell carcinoma**

Multi-Disease Detector → Predicts if the person has **Atelectasis, Consolidation, Infiltration, and other lung diseases**

Future Scope

Early diagnosis of hazardous diseases more precisely

Enhanced human abilities and mental health support

Improved accessibility

Month 0   Month 6   Year 1   Year 3   Year 5

Provide Services for Free to All | **Introduce Subscription, Pay as Go and Data Collection Pipeline** | **Continuous Updation of Models through collected Data** | **Exploring More Diseases**

Business Relevance

Individuals can **self evaluate** before going to doctor

Absolutely Free!*

Clinics could **accelerate** the check ups of patients

Monthly ₹999**

Hospitals can **pre-evaluate** patients

Monthly ₹4999

Societal Impact / Novelty

Specialized models trained to classify diseases

Explainable AI with the help of Class Activation Map methods

Reducing queues in Hospitals

Increasing productivity of Hospital staff

Affordable & **Quick** Medical Care will be available for everyone