SafeGuard HUB

Cultivating AI Expertise, Guiding Decisions for Confident Diagnoses

Table of contents

01

Business Module

Talking about the business model of our application

02

Technical Module

Talking about the technical aspects

03

Demo

Quick demo

04

Q&A

Questions and answers

SafeGuard Hub

Our application is intended to provide as a second opinion on urgent ultrasound study for inexperienced practitioners.

01

Business Module

Talking about the business model of
our application

Customer needs

- Let AI provide a second opinion on urgent ultrasound study for inexperienced practitioners
- Learn how to analyze ultrasound images

Persona

Doctor

- Wants to have a reliable way to strengthen his decision on the diagnosis
- Wants a platform where he can share the results with other medical practitioners

Medical student

- Is worried that there aren't enough trustworthy resources available for learning about specialized techniques.
- Can automatically share his diagnosis with another doctor for a quick review

Prototype

Customer needs we've resolved

With the help of our application, our clients may now obtain a second opinion on specialist procedures increasing their confidence in accurately diagnosing patients.

Market opportunities

- Distributing our app to healthcare facilities over a subscription.
- Installing our AI models into specialized hardware
- Collaboration with medical universities for learning purposes

Business model

Concurrent solutions:

It appears that there isn't a platform available for using an AI model to detect pneumothorax.

Regarding the AI model, there appear to be distinct trained models: one model appears to have true negative and true positive rates of 75% and 84%, respectively, whilst our model appears to have an accuracy rate of about 90%.

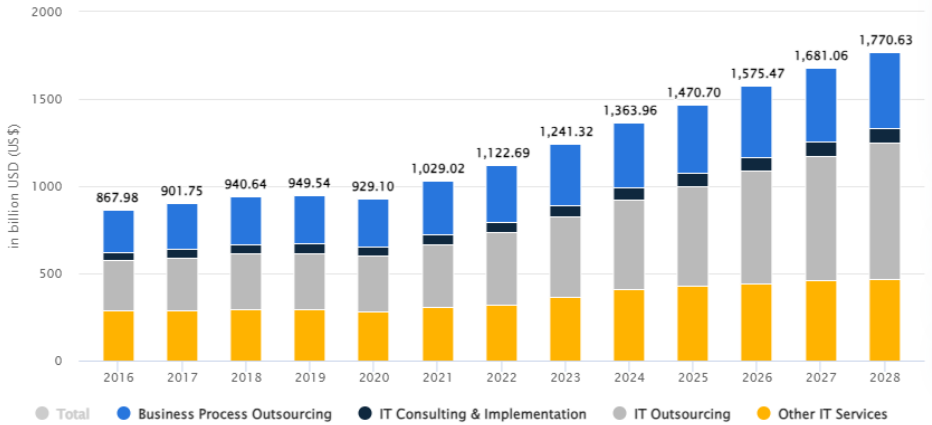
Value proposition:

Harness the power of AI to bridge knowledge gaps for young practitioners. SafeGuard Hub provides expert opinions, guiding users to make confident diagnostic decisions.

Possible clients:

- Doctors, Medical staff
- University students

There is a lot of space for growth on our platform because the IT sector expanded by 6.15% YoY and the AI field is booming.



“Artificial intelligence is not a substitute for human intelligence; it is a tool to amplify human creativity and ingenuity.”

— Fei-Fei Li, Co-Director of the Stanford Institute for Human-Centered Artificial Intelligence

02

Technical Module

Talking about the technical aspects

Application

Our application has 3 big parts, Back-end, Front-end and AI.

The Back-end is a .NET web api , that has a documentation deployed on localhost.

The Front-end is a react web application.

The AI is a FastAPI python project.

Innovative component

The main innovative component that we have in our application is the AI model

Self-made components

Our AI model is self-made and trained:

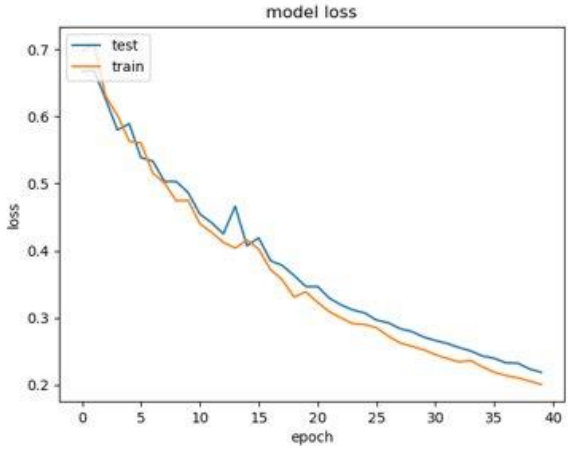
For the model we started with `MobileNet`, a dedicated convolutional network model for image classification:
The size of the model allows its use in low-power hardware contexts

The model architecture does not compromise performance

AI results

The primary challenge we faced during the AI creation process was the limited quantity of data available to us—roughly 300 print screens.

However, we achieved a 90% accuracy rate and incredibly fast response times (<25 ms).



03

Demo

Demo of the application

Future work

Ai:

- Exploring the pre-trained models for this problem in more detail
- Implementation of an attention mechanism for image processing
- Evaluation of these models on larger sets of images (as possible).
- Extending the capabilities of ultrasound video processing
- Expanding capabilities to match multiple images to a subject

Future work

Hub:

- Adding more models
- Sending reports automatically to email
- Implementing app on hardware

Our team

Petruţiu Mihai-Bogdan

DPI – Back-end developer

Pâslaru Gabriel

DPI – Front-end developer

Murariu Tudor

DPI – Front-end developer

Năstasă Ştefan

MIRPR

Dinică Mircea

MIRPR

Haraseniuc Laura

MIRPR

04

Q&A

We value your time and participation during this presentation. Please do not hesitate to contact us if you would like more information on any of the topics covered. We are happy to answer any questions you may have now.