

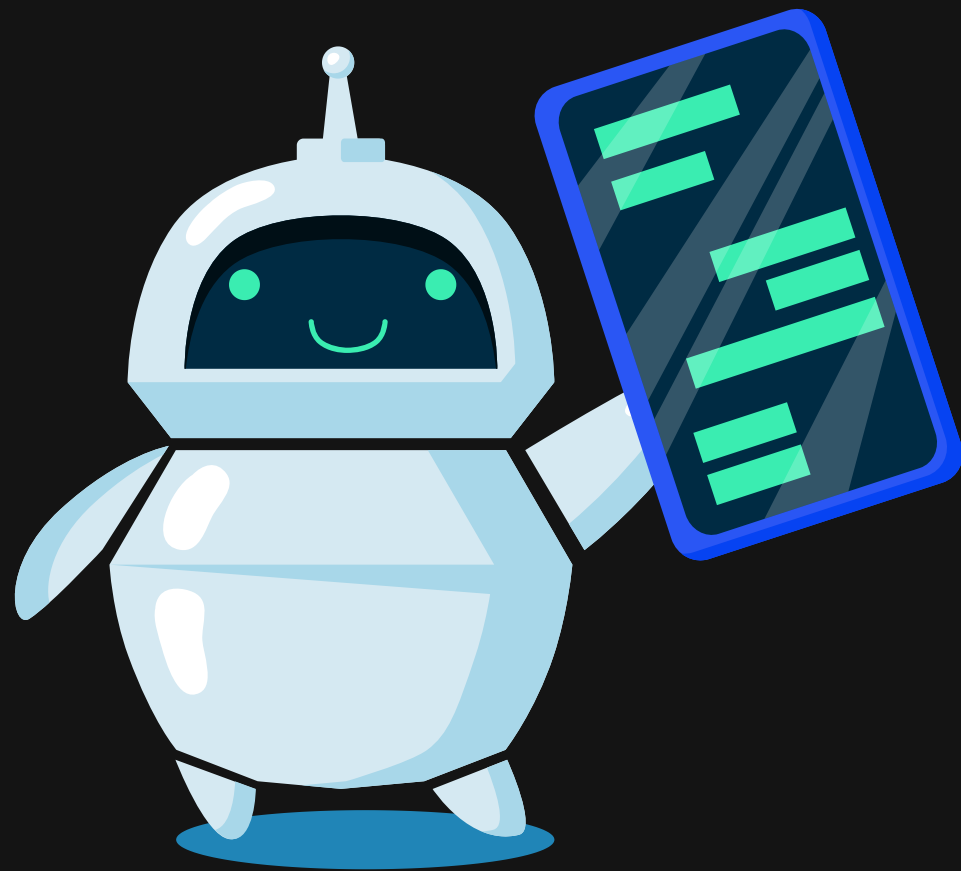
Biomedical NLP

BIO-NER TOOL

For symptom identification in preliminary diagnosis



PROBLEM STATEMENT



- Presence of ambiguity present in medical-bots deployed in general healthcare.
- Reduce presence of false positives in medical-related NLP.
- Lack of real life implementation of chatbots

RESEARCH GAP

The background of the slide features a series of overlapping, wavy teal lines that create a sense of motion and depth, primarily concentrated on the left side and extending towards the center.

- Application of dialog models in medicine such as ComBot performs optimally but can falsely consider chats with a stressed individual to be a false positive.
- Performance of LLMs, ChatGPT and BARD are much better, but failed to provide precise diagnosis and required further consultation to reach a decision.
- In terms of ethics, AI models should consider– patient safety, regulation, accountability, liability and the impact on the patient–physician relationship.

Proposed Approach

A middle-ware tool



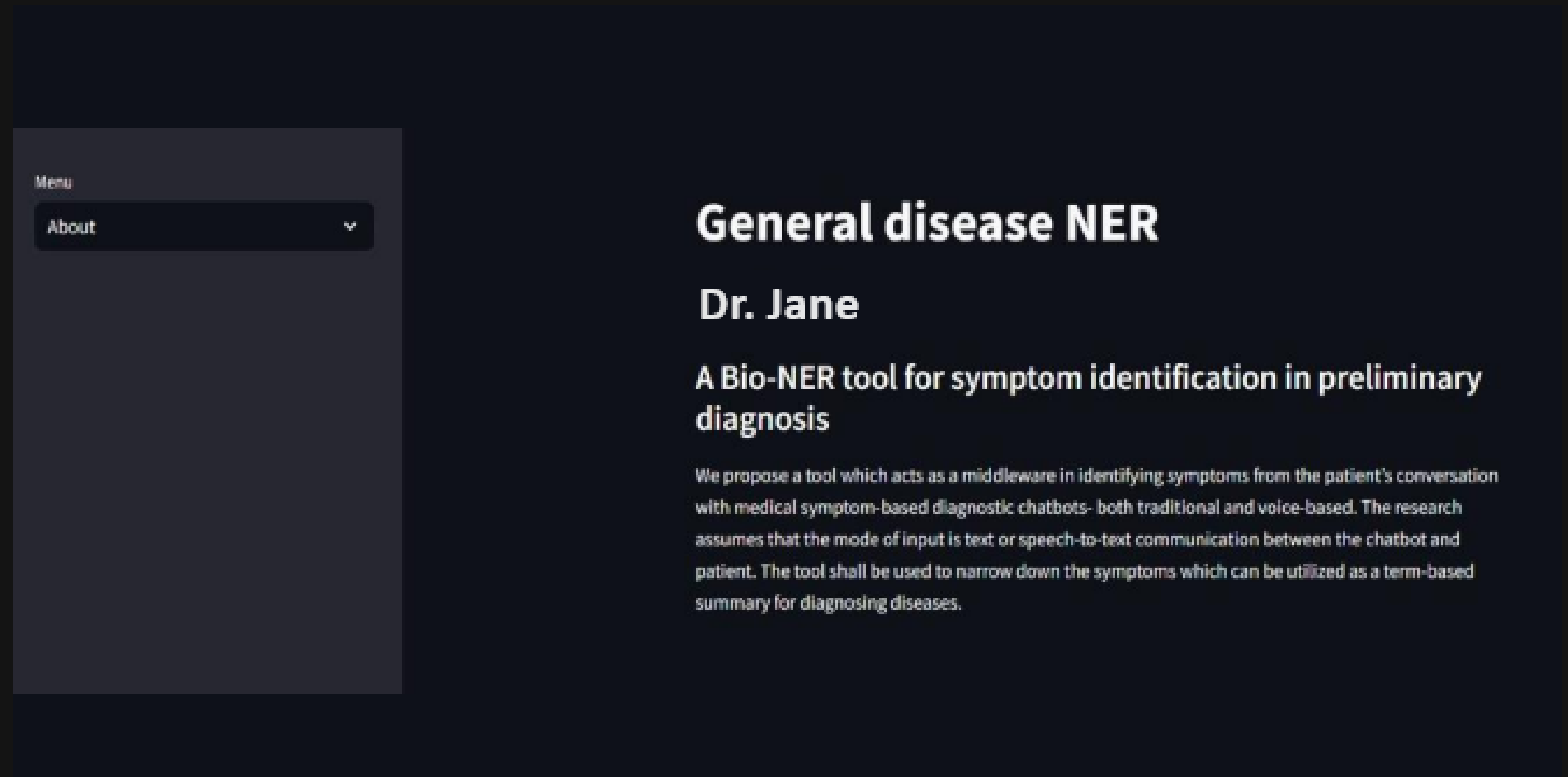
- GENERAL SYMPTOM DATASET
- BERT MODEL
- FRONT END DEMO

DATASET

K	L
when i raise my hand i feel pain in my shoulder.	Shoulder pain
I have acne all over my face	Acne
I get clusters of pimples on my face that never go away.	Acne
My foot hurts me a lot of playing football	Foot ache
I'm having a hard time reading because the letters are all fuzzy	Blurry vision
i was playing football and injured with joint pain.	Joint pain
I feel discomfort throughout the body in general	Body feels weak
there pain in my foot	Foot ache
I don't know why I'm constantly sad.	Emotional pain
I got a divorce last year and I just can't stop dwelling on how to get revenge on my ex hus	Emotional pain
Chronic disease of hair follicles and sebaceous glands	Acne
My chest hurts when I smoke	Internal pain
I feel lightheaded when I stand up	Feeling dizzy

MODEL

- Train-val-test split- 70:10:20
- AdamW optimizer
- Learning rate scheduler
- Streamlit front-end



DEMO

Menu

Home ▾

General disease NER

Dr. Jane

Hello! I am a standby Emergency department medic. In order to proceed with your appointment with the correct doctor, I shall diagnose your symptoms as accurately as possible.

Therefore, kindly enter the symptoms you are facing in the box below. Please adhere to mentioning one problem per sentence for your ease and faster prediction.

Explain your ailments for first response diagnosis:

Symptom:

I have a wound on my head. My hair falls out a lot as well.

Submit

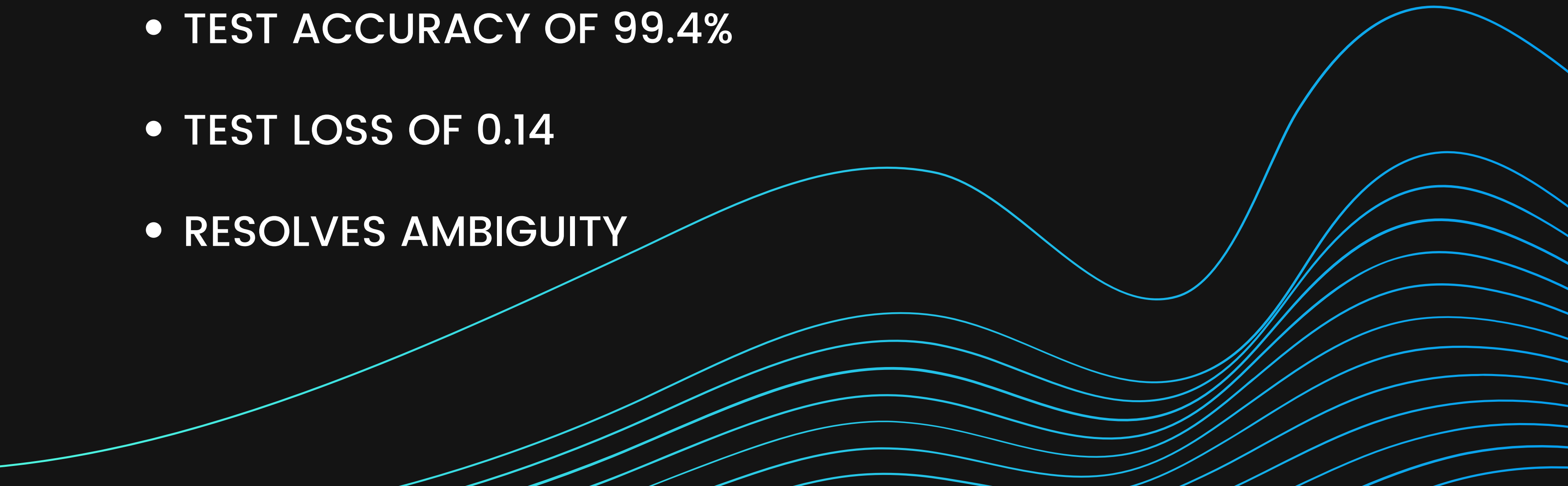
You seem to have the following symptoms:

Open wound, Hair falling out

Thank you for your response! Please wait while I shall perform a quick diagnosis and direct you to the concerned department.

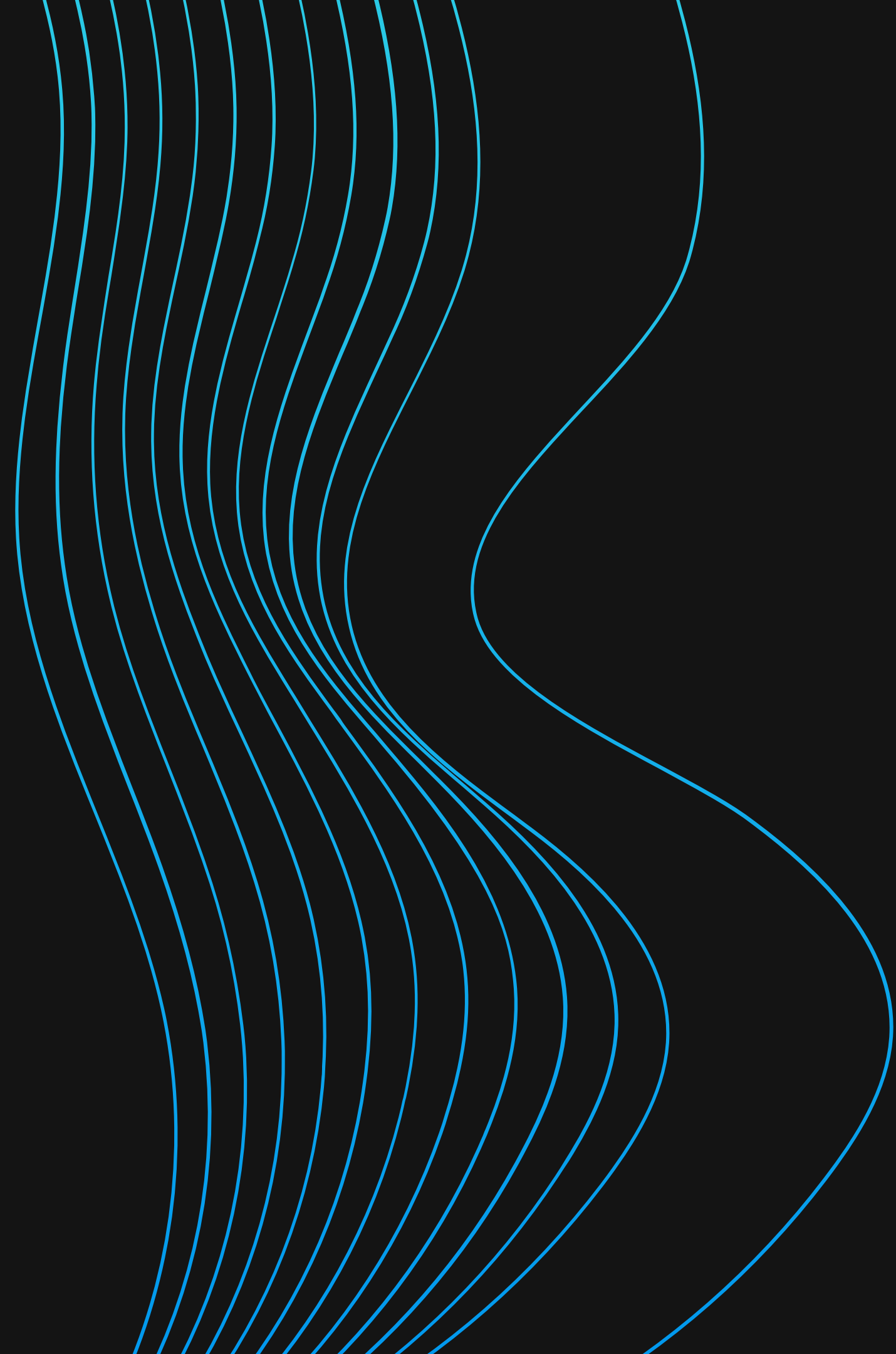
OUTCOMES

An effective web application capable to preliminary symptom recognition

- TEST ACCURACY OF 99.4%
 - TEST LOSS OF 0.14
 - RESOLVES AMBIGUITY
- 
- A series of light blue wavy lines that flow from the bottom left towards the bottom right, creating a sense of movement and depth against the dark background.

FUTURE WORK

- USE OF LARGER LABELED DATASET
- ACCOMMODATE MULTI-ENTITY RECOGNITION
- IMPLEMENTATION OF A STACK MODEL WITH DISEASE PREDICTION



REFERENCES

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