AI Symptom Checker for Rural Uganda UG

A Senior 3 Student-Friendly Guide

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What Does This Project Do?

This app acts like a **digital nurse** for rural communities:

- You tell it symptoms (e.g., fever, cough).
- It guesses the illness (e.g., malaria).
- Gives first-aid advice in **4 languages** (English, Luganda, Swahili, Runyankole).

Files Explained

Python Code (`iSymptomChecker.py`)

Part 1: Import Tools

```
import streamlit as st   # Makes buttons/screens
import pandas as pd      # Reads data files
import speech_recognition as sr  # Listens to your voice
# ... (other imports)
Think of these like "toolboxes" – each adds special features to the app.

Part 2: Load the Dataset
python
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def load_data():
    data = pd.read_csv("symptom2disease_ug_children.csv")  # Open the data file
    le = LabelEncoder()  # Converts disease names to numbers
    data["disease_encoded"] = le.fit_transform(data["disease"])
    return data, le
```

What it does: Teaches the app which symptoms match which diseases.

Part 3: Train the AI
python
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```python
model = RandomForestClassifier().fit(X, y)
```
Think of this like a student studying a textbook – the AI learns from the dataset.

Part 4: Language Setup
python
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```python
translations = {
    "en": {"title": "AI Symptom Checker..."},  # English
    "lg": {"title": "AI Okuyamba..."},         # Luganda
    # ... (Swahili & Runyankole)
}
```
Why: Lets users switch languages like changing radio stations.

Part 5: Voice Input
python
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```python
def get_voice_input():
    r = sr.Recognizer()
    with sr.Microphone() as source:
        audio = r.listen(source)  # Listen to microphone
    return r.recognize_google(audio)  # Convert speech to text
```
Example: If you say "omusujja", it sets "fever" to 1.

Part 6: Buttons & Sliders
python
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```python
language = st.radio("Language:", ["English", "Luganda", ...])  # Language selector
symptoms["fever"] = st.number_input("Fever", 0, 1)  # Slider for fever (0=No,
1=Yes)
```
What you see: Buttons/sliders to interact with the app.

Dataset (symptom2disease_ug_children.csv)
Format:
csv
Copy
```csv
fever,cough,headache,...,disease
1,1,0,...,Malaria
0,1,1,...,Common Cold
```
Columns: Symptoms (1 = Yes, 0 = No).

Rows: Diseases with their symptoms.

Example: Malaria row has 1 under "fever" and "cough".

First-Aid Tips (first_aid.json)
Format:
json
Copy
```json
{
```

```
    "Malaria": {
        "english": "Use antimalarial medication...",
        "luganda": "Kozesa eddagala...",
        "swahili": "Tumia dawa...",
        "runyankole": "Koresha edagala..."
    }
}
```
Structure: Each disease has advice in 4 languages.

How It All Works
You Input Symptoms:

Voice: Say "nkuba" (cough) or "omusujja" (fever).

Manual: Slide to 1 for symptoms the child has.

AI Predicts Disease:

The AI compares symptoms to the dataset.

Show Results:

Displays the disease name and first-aid tips in your language.

How to Set It Up
Install Tools:

bash
Copy
```
pip install pandas streamlit scikit-learn SpeechRecognition pyaudio
```
Download Files:

iSymptomChecker.py (code)

symptom2disease_ug_children.csv (dataset)

first_aid.json (tips)

Run:

bash
Copy
```
streamlit run iSymptomChecker.py
```
Advantages
✅ Works offline
✅ Uses local languages
✅ Teaches health and coding
✅ Free to use and modify

Limitations
❌ Needs a smartphone/computer
❌ Can't replace a real doctor
❌ Voice input struggles with accents

```
Future Ideas
Add SMS support for basic phones.

Include pictures of symptoms.

Partner with Biomedical engieers and medical personel for testing.

Developed by Ndagire Kaitlin, a Ugandan Student
Empowering communities through technology!

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```