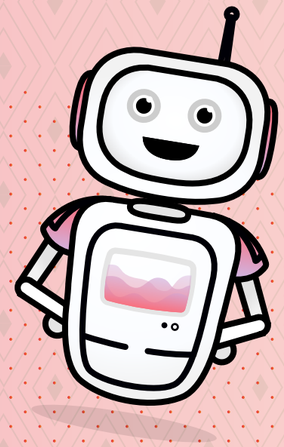
Common Voice
mozilla

Africa's Talking



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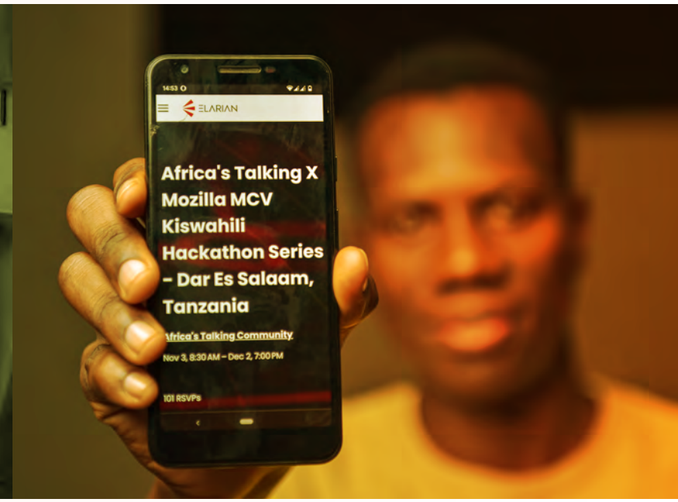

Introduction

This was a transformative 4-part Hackathon Series, focused on harnessing the potential of voice technology. These sessions were designed to equip participants with vital skills for utilizing the Mozilla Common Voice (MCV) Kiswahili dataset effectively, fostering a community of problem-solving developers.

Alongside, the developers dived into the realm of machine learning as they delved into model training and implementation. This holistic approach ensured not only proficiency in voice tech (Using the Africa's Talking APIs as well) but also hands-on experience in building intelligent systems.

Countries Representation

The Mozilla Hackathon Series spanned across 2 countries over the time frame as shown:

	Kenya (Nairobi)	Tanzania (Dar es Salaam)
Training Start Date	13th October, 2023	3rd November, 2023
Hackathon 1 Start Date	14th October, 2023	4th November, 2023
Hackathon 1 End Date	15th November, 2023	8th November, 2023
Hackathon 2 Start Date	18th November, 2023	11th November, 2023
Hackathon 2 End Date	6th December, 2023	29th November, 2023
Final Pitching Date	9th December, 2023	2nd December, 2023
Number of RSVP'd Developers	**205**	**113**

Partners and Companies Present

Partners:

Common Voice
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Sarufi

ZiNDi

SWAHILIPOT

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TECH INNOVATORS NETWORK

NLPGhana

Africa's Talking

Kenya - Teams

Here are the final standings for the Kenya Teams who participated:

Position	Team
1st	Inveai
2nd	Julius Mwangi
3rd	Ubuntu
4th	Los Alamos
5th	Akilisha
6th	T-health




Kenya - Team Number 1

Team Name

Inveai

Solution Sector: Agri-business

Target Audience: Non-tech savvy agricultural business owners

Problem

Non-business savvy agri-business owners face challenges when trying to tabulate their business transactions. This solution uses voice prompts to enable transaction tabulation.

How it Works

The Inveai mobile app is installed via Playstore, and users sign in via Google. The business details are initially stored in the app such as prices, current stock, and all other relevant business details. The user inputs live voice recordings to make changes to the inventory/stock, whose data is inserted in the app initially. The business owner records transactions via live voice input to have the response in a conversational manner on the app stating the changes made in the stock e.g. Mauzo yameongezwa na mbili. On request of total sales, the data which has been recorded in a pdf of all the sales is sent to the user via SMS using a link to download the pdf report.

Technologies used

LLMs take in Swahili input (Prompts to the inventory), the input translated to English. The prompts are then edited on the current business documents input on the app. A response is then translated back to Swahili and displayed on the App Interface. For data documents, a lik to the PDF document is sent via SMS using the Africa's Talking SMS API.

Kenya - Team Number 2

Team Name

Julius Mwangi

Solution Sector: Health

Target Audience: Patients

Problem

The application aims to reduce time taken during documentation at the hospitals, as well as easy access to answers for medical questions for the patients.

How it Works

Application to help patients reduce documentation time at the hospital. This is done by enabling diagnosis input without a manual process which helps save time. The application had the following website pages: Information, Sign up, Login, and a voice submission page. The user consents to sending questions to a doctor via Live recording or uploading a pre-recorded file. The audio Swahili input is converted to text, then an LLM converts it to English and uses GPT 3.5 to find an answer. The answer is converted back to Swahili then displayed on the website. Response can be downloaded locally as a folder with 2 files (question and answer). The presentation was well researched, and the application was purely written in Swahili, hence, clearly covers the target audience.

Technologies used

LLMs used in translation of English and Swahili prompts. GPT 3.5 is used to find the answers to the questions. The Website was developed using Streamlit prototyping package. Python ML packages were used in the development as well.

Kenya - Team Number 3

Team Name

Ubuntu

Solution Sector: Agriculture

Target Audience: Farmers

Problem

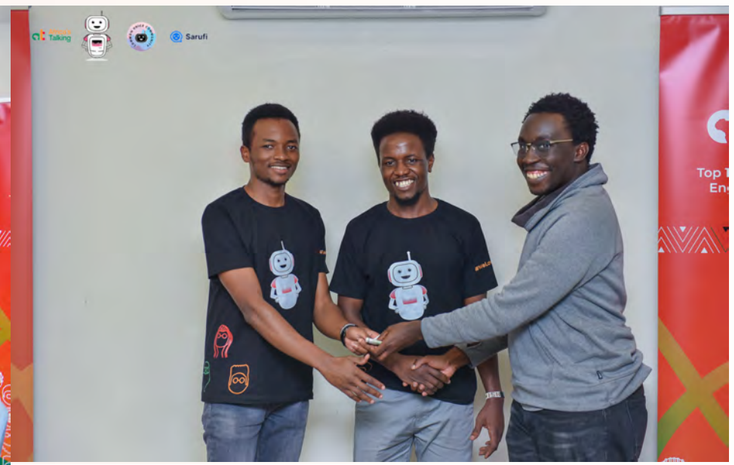
This is an AI Farmer assistant tool to help farmers ask questions for challenges they are facing

How it Works

The solution is in the form of a website, with a Q&A section. The farmer inputs a speech question in Swahili into the prompt section and has LLMs convert the question to English and its response sent via Africa's Talking Voice or SMS APIs to the farmer in their language. For the voice, the farmer gets dialled and the response read to them, for SMS, they receive a text response in Kiswahili or their native language.

Technologies used

LLMs are used in STT translation, annd to translate Swahili input to English, and then answers received are converted back to Swahili for displaying to the farmer. Africa's Talking Voice API is used for the call to the farmer with the response, and Africa's Talking SMS API for sending a text response to the farmer.



Tanzania - Teams

Here are the final standings for the Tanzania Teams who participated:

Position	Team
1st	Cassiopeia surge
2nd	Heroes
3rd	Bytebusters
4th	Electrorepair

Tanzania - Team Number 1

Team Name

Cassiopeia Surge

Solution Sector: Education

Target Audience: Students - Kindergarten subset

Problem

Most students are fluent in Swahili and need to first learn English in order to learn other subjects such as Mathematics. This web app enables students to ask Mathematics questions in Swahili and get the solution working in Swahili without having to hire expensive tutors to teach Math in the language they are conversant with (Swahili).

How it Works

Solution works by having students prompt the app for answers to questions via voice. The solution is a web app with a child friendly interface, with a slot for the students to add their questions as Kiswahili audio files. The questions are translated then solved with the response shown in Kiswahili as a step-by-step process. Frequent users of the app are awarded with AIrtime via the Africa's Talking Airtime API. The parents set up the account on behalf of the minors or students.

Technologies used

LLMs (OpenAI Whisper Model used) to take in Swahili input (Questions), the input translated to English, OpenAI GPT 3.5 Turbo to get English answers to the tyranslated questions, the answer then translated back to Swahili and displayed on the Web Interface. Frequent app users receive airtime incentives (Africa's Talking Airtime API).

Tanzania - Team Number 2

Team Name

Heroes

Solution Sector: Job Seeking/HR - Govt.

Target Audience: Job seekers and Companies

Problem

Most students are fluent in Swahili and need to first learn English in order to learn other subjects such as Mathematics. This web app enables students to ask Mathematics questions in Swahili and get the solution working in Swahili without having to hire expensive tutors to teach Math in the language they are conversant with (Swahili).

How it Works

The web platform offers 2 different user journeys. As a job seeker, and as a hiring company. The platform semi-automates application and recruitment, and offers a platform for job discovery. For the job seeker, they are able to sign up and upload their documents, find a suitable job and apply and check on the progress. There is also a QnA section where they can ask questions on the job posted and receive responses. This can be done in both English and Swahili. The company posts jobs seeking employees and receives applications for the platform for acceptance/denial.

Technologies used

LLMs used in translation of English and Swahili prompts. The Africa's Talking Voice API used to offer an offline version of the QnA section where job seekers ask questions on the jobs via call and the app skims through the data in the database to select a response, then the user receives a response on the call, which is done in English or Swahili. The platform provided caution for data privacy, where the user's data is stated to be kept private and not shared without consent. Data in the database is also encrypted.

Tanzania - Team Number 3

Team Name

Bytebusters

Solution Sector: Agriculture

Target Audience: Farmers

Problem

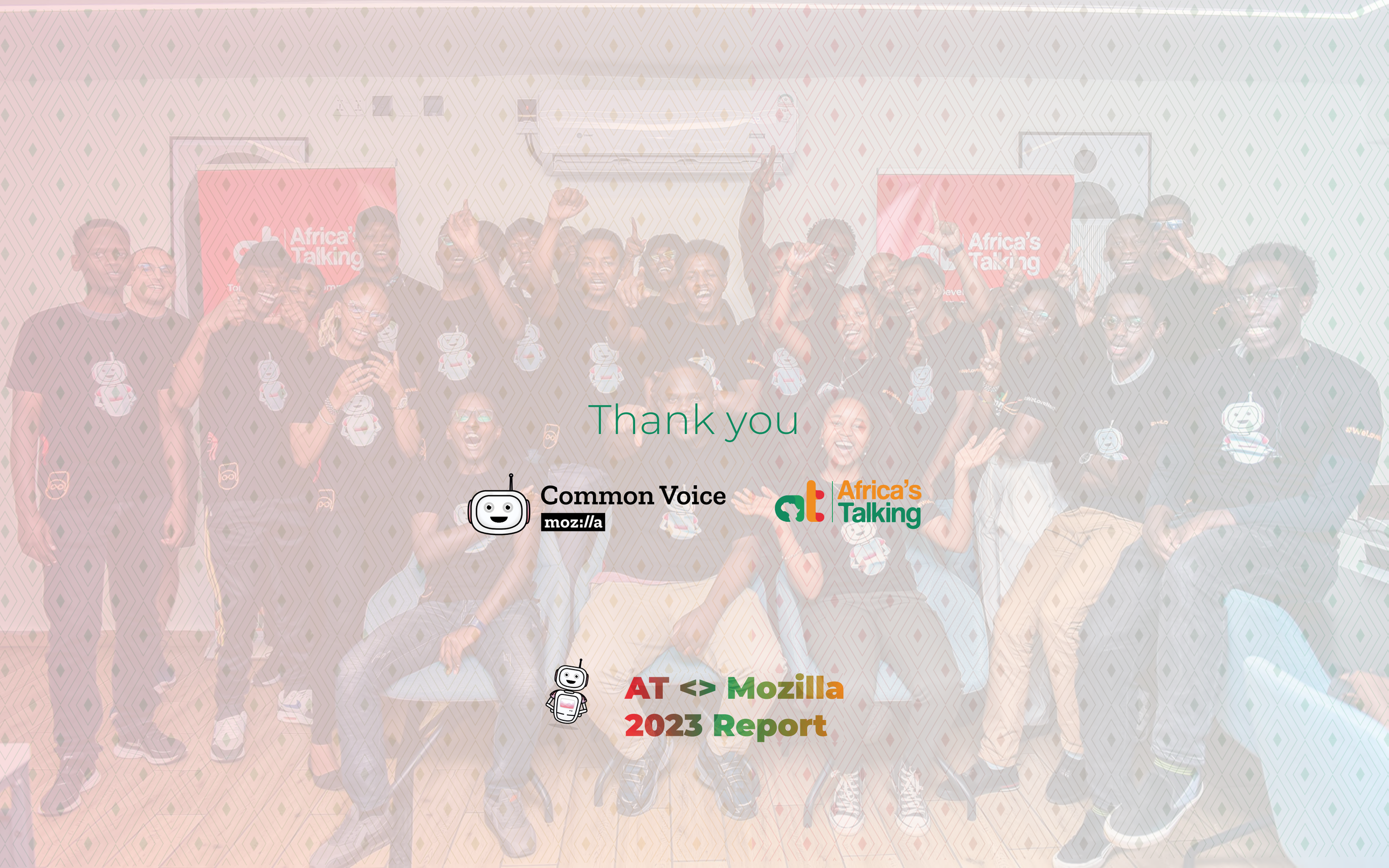
Most farmers in TZ face language barrier challenges when trying to access farming and agricultural information

How it Works

In this mobile application, the farmer records questions in Swahili on their app to get responses in Swahili. The app also captures information on weather, crop information and obtaining consults in Swahili. A future addition is adding a USSD option for offline access to information.

Technologies used

LLMs are used to translate Swahili input to English, and then answers received are converted back to Swahili for displaying to the farmer. Africa's Talking USSD API is used for the USSD offline implementation to be added in future.



Thank you

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