QUICKSCAN - CANVAS

Cassava Leaf Disease Detection App

NAME: Cassava Leaf Disease Detection App
DATE: September 5, 2024 1:18 AM

DESCRIPTION OF TECHNOLOGY
This is an app that helps farmers in Africa distinguish between 4 different types of diseases and also can recognize rather the plan is healthy. This helps villagers and other users to cure their crops saving them time and resourses for expert to come to them for check. Lets not forget also that the Cassava plan is Africaans main source of food and also has significans in their culture.

HUMAN VALUES

The project impacts the identity and social dynamics of its users in various ways.
If two friends are using the product, it could enhance their relationship by providing a common tool for collaboration and support in managing their crops, potentially leading to shared learning experiences and mutual assistance. There's a potential for the app to be perceived negatively if it is seen as replacing human expertise or if errors in disease detection lead to significant crop loss.…

TRANSPARENCY

Yes. This is why I created my Transparency document where you can find our everything essential regarding the project. Moreover, in the current Jupyter file of the project, there are added explanations for each step, that help the user understand even if he is not in the IT sphere.

IMPACT ON SOCIETY

As the second-largest provider of carbohydrates in Africa, cassava is a key food security crop grown by smallholder farmers because it can withstand harsh conditions. At least 80% of household farms in Sub-Saharan Africa grow this starchy root, but viral diseases are major sources of poor yields. With the help of data science, it may be possible to identify common diseases so they can be treated.

STAKEHOLDERS

- Elina Todorova - biologist
- users - farmers in Africa

SUSTAINABILITY

This is very important in my project as in order to be delivered considersing my target audience , the lack of access to even old devices in Africa. To reduce the energy used in accessing cloud services, the app might include an offline mode that allows it to function without a constant internet connection, thereby saving the energy that would be used in data transmission.

HATEFUL AND CRIMINAL ACTORS

If the app is successful, there might be attempts to reverse engineer or copy its software without permission, leading to copyright infringement issues. Also, as the app would collect and store data, there could be potential misuse of this information, especially if not properly secured - this includes selling farmer data without consent, which could lead to privacy violations.

DATA

Yes, I'm aware of these fundamental issues with data, and they are important considerations when developing technology like this. It is ensured that the data used to train the app comes from diverse sources and reflects various stages of disease, reducing the subjective nature of any single source. Also, the images data is deriven from various farming conditions to mitigate bias and improve the app's accuracy across different environments.
…

FUTURE

With more farmers able to quickly diagnose and treat diseases, overall crop health and yields could improve significantly, enhancing food security and economic stability in rural communities. This means if farmers can diagnose crop diseases themselves, the reliance on agricultural experts may decrease, affecting the traditional roles of these experts within agricultural communities.On the other hand,farmers' attitudes towards technology could shift significantly, with increased trust and reliance on digital tools for agricultural management.

PRIVACY

The app uses photographs of crops to analyze disease so theres a potential for these images to include background elements that could identify a location or individual.

INCLUSIVITY

When the image contains a yellow leaf, there could be multiple interpretations. Firstly, this could be due to a disease or lack of sunlight and the plant to actually be healthy. Secondly, in the dataset can be found images of yellow leaf assigned to class 0 and class 1 as well as class 4 which is the healthy plant. This is why it is used a deep learning model involve multiple processing layers to learn representations of data with multiple levels of abstraction.

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QUICKSCAN - CANVAS - HELPSIDE Cassava Leaf Disease Detection App

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HUMAN VALUES

How is the identity of the (intended) users affected by the technology?

To help you answer this question think about sub questions like:

- If two friends use your product, how could it enhance or detract from their relationship?
- Does your product create new ways for people to interact?…

TRANSPARENCY

Is it explained to the users/stakeholders how the technology works and how the business model works?

- Is it easy for users to find out how the technology works?
- Can a user understand or find out why your technology behaves in a certain way?
- Are the goals explained?
- Is the idea of the technology explained?
- Is the technology company transparent about the way their…

IMPACT ON SOCIETY

What is exactly the problem? Is it really a problem? Are you sure?

Can you exactly define what the challenge is? What problem (what 'pain') does this technology want to solve? Can you make a clear definition of the problem? What 'pain' does this technology want to ease? Whose pain? Is it really a problem? For who? Will solving the problem make the world better? Are you sure? The problem definition will help you to determine…

STAKEHOLDERS

Who are the main users/targetgroups/stakeholders for this technology? Think about the intended context by…

When thinking about the stakeholders, the most obvious one are of course the intended users, so start there. Next, list the stakeholders that are directly affected. Listing the users and directly affected stakeholders also gives an impression of the intended context of the technology.
…

SUSTAINABILITY

In what way is the direct and indirect energy use of this technology taken into account?

One of the most prominent impacts on sustainability is energy efficiency. Consider what service you want this technology to provide and how this could be achieved with a minimal use of energy. Are improvements possible?

HATEFUL AND CRIMINAL ACTORS

In which way can the technology be used to break the law or avoid the consequences of breaking the law?

Can you imagine ways that the technology can or will be used to break the law? Think about invading someone's privacy. Spying. Hurting people. Harassment. Steal things. Fraud/ identity theft and so on. Or will people use the technology to avoid facing the consequences of breaking the law (using trackers to evade speed radars or using bitcoins to launder…

DATA

Are you familiar with the fundamental shortcomings and pitfalls of data and do you take this sufficiently into…

There are fundamental issues with data. For example:

- Data is always subjective;
- Data collections are never complete;
- Correlation and causation are tricky concepts;
- Data collections are often biased;…

FUTURE

What could possibly happen with this technology in the future?

Discuss this quickly and note your first thoughts here. Think about what happens when 100 million people use your product. How could communities, habits and norms change?

PRIVACY

Does the technology register personal data? If yes, what personal data?

If this technology registers personal data you have to be aware of privacy legislation and the concept of privacy. Think hard about this question. Remember: personal data can be interpreted in a broad way. Maybe this technology does not collect personal data, but can be used to assemble personal data. If the technology collects special personal data (like…

INCLUSIVITY

Does this technology have a built-in bias?

Do a brainstorm. Can you find a built-in bias in this technology? Maybe because of the way the data was collected, either by personal bias, historical bias, political bias or a lack of diversity in the people responsible for the design of the technology? How do you know this is not the case? Be critical. Be aware of your own biases.…

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