QUICKSCAN - CANVAS

Automated laboratory

NAME: Automated laboratory
DATE: July 15, 2025 8:12 PM

DESCRIPTION OF TECHNOLOGY
The RobotLab project is driven by the need to revolutionize the way chemical mixtures are designed and synthesized by combining machine learning and artificial intelligence

HUMAN VALUES

The users are saved in a data management framework. Their names can be seen by an AI, or groups who request data. Scientists who like to conduct experiments, might not be able to follow their passion as much, as experiments will be conducted automatically.

TRANSPARENCY

Not applicable yet, as the RobotLab project is still in its early stages.

IMPACT ON SOCIETY

The challenge is the inefficiency of traditional chemical mixture design methods, which are based on trial and error in experiments. This work innovates chemists, industries, and consumers. By streamlining processes through AI-driven analysis and increased experimentation, the technology seeks to enhance product development, benefiting various industries and society at large by accelerating innovation.

STAKEHOLDERS

- Research Group
- Chemical Scientists
- Data scientists

SUSTAINABILITY

The RobotLab project considers both direct and indirect energy usage in its operations. Examples of direct energy usages are energy consumption from computational processes, data storage, and robotic automation.Examples of indirect energy usage are the environmental impact of data centers, manufacturing, and overall infrastructure.

HATEFUL AND CRIMINAL ACTORS

The technology implemented in RobotLab, is intended for scientific advancements and improving efficiency in research. However, the technology can be misused. For instance, using AI to manipulate experimental outcomes might lead to falsified research, potentially violating laws and regulations in scientific research and product development

DATA

Yes, the RobotLab project acknowledges fundamental data challenges such as bias or incompleteness. Implementing trategies like data cleaning is vital to mitigate these issues.

FUTURE

RobotLab might see other branches copy the technology in various industries beyond chemistry. It could revolutionize research methodologies, leading to quicker innovation in product development.

PRIVACY

Yes, personal data on who was involved in the experiment.

INCLUSIVITY

The technology itself doesn't intentionally have bias. However, biases can emerge from the data used to train it. If the training data is incomplete, the AI models developed within the RobotLab project could reflect those biases.

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QUICKSCAN - CANVAS - HELPSIDE

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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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