

Intelligence Content Hub

The technology in this project centers around Large Language Models. Leveraging advanced Natural Language processing, the system will comprehend vast textual product data and through fine-tuning, generate precise responses to queries about the data it has been trained on.

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Level of education: Bachelor

Technology Impact Cycle Tool

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Impact on society

What impact is expected from your technology?

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

Product manufacturing companies accumulate extensive catalogues of data over time. Consequently, it becomes challenging to efficiently educate new employees about the products. Moreover, when customer service agents are confronted with queries about specific products, they frequently have to consult the product development team for information. This results in distractions during the product development phase

Are you sure that this technology is solving the RIGHT problem?

Yes, I am confident that this technology is addressing the correct problem. After discussing with the stakeholders involved I was able to identify that the challenge lies in efficiently managing and comprehending extensive product data, particularly in the context of large manufacturing catalogues.

How is this technology going to solve the problem?

By leveraging advanced Large Language Models, we aim to streamline the process of handling such data, facilitating quicker and more accurate responses to inquiries related to manufacturing companies' data. Due to LLMs ability to retain large textual information in their memory and generate a response to queries based on the information stored this would effectively solve the problem.

I have tested the technology by making a prototype and with the prototype I was able to ask questions on the data I trained the LLM on.

What negative effects do you expect from this technology?

One potential negative effect that I anticipate is that companies relying on this technology may come to believe it is infallible, leading them to overlook the importance of human validation in response accuracy.

In what way is this technology contributing to a world you want to live in?

In the short term, this technology accelerates information provision, allowing people to focus on development rather than prolonged research. Personally, it aligns with my values, promoting a society driven by accessible knowledge for swift and validated progress.

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Now that you have thought hard about the impact of this technology on society (by filling out the questions above), what improvements would you like to make to the technology? List them below.

After considering the societal impact of the intelligence content hub I have no improvements in mind

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Hateful and criminal actors

What can bad actors do with your technology?

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

N/A

Can fakers, thieves or scammers abuse the technology?

N/A

Can the technology be used against certain (ethnic) groups or (social) classes?

N/A

In which way can bad actors use this technology to pit certain groups against each other? These groups can be, but are not constrained to, ethnic, social, political or religious groups.

N/A

How could bad actors use this technology to subvert or attack the truth?

The major way I know a bad actor can affect the technology is by retraining the LLM to give incorrect answers to the questions it can receive

Now that you have thought hard about how bad actors can impact this technology, what improvements would you like to make? List them below.

N/A

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Privacy

Are you considering the privacy & personal data of the users of your technology?

This category is only partial filled.

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

No, the technology hasnt been made in mind to register personal data.

Do you think the technology invades the privacy of the stakeholders? If yes, in what way?

With the current use case data, I do not think the technology invades the privacy of the stakeholders involved.

Is the technology is compliant with prevailing privacy and data protection law? Can you indicate why?

This question has not been answered yet.

Does the technology mitigate privacy and data protection risks/ concerns (privacy by design)? Please indicate how.

This question has not been answered yet.

In which way can you imagine a future impact of the collection of personal data?

This question has not been answered yet.

Now that you have thought hard about privacy and data protection, what improvements would you like to make? List them below.

This question has not been answered yet.

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Human values

How does the technology affect your human values?

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

N/A

How does the technology influence the users' autonomy?

Yes, the technology has the potential to create dependency, given its ability to deliver quick and seemingly accurate answers. This could lead users to overlook the importance of validating the responses. To address this, I plan to implement notifications or additional prompts, emphasising that the technology serves as a co-pilot and that its answers should undergo further validation before reliance.

What is the effect of the technology on the health and/or well-being of users?

Although the technology can be confusing when the answers are incorrect, there are no identified negative effects on health or well-being

Now that you have thought hard about the impact of your technology on human values, what improvements would you like to make to the technology? List them below.

N/A

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Stakeholders

Have you considered all stakeholders?

This category is only partial filled.

Who are the main users/targetgroups/stakeholders for this technology? Think about the intended context by answering these questions.

Name of the stakeholder

Customer service Agents

How is this stakeholder affected?

The technology equips them with quick access to comprehensive product information, enabling swifter and more precise responses to customer inquiries

Did you consult the stakeholder?

Yes

Are you going to take this stakeholder into account?

Yes

Did you consider all stakeholders, even the ones that might not be a user or target group, but still might be of interest?

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Now that you have thought hard about all stakeholders, what improvements would you like to make? List them below.

This question has not been answered yet.

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Data

Is data in your technology properly used?

Are you familiar with the fundamental shortcomings and pitfalls of data and do you take this sufficiently into account in the technology?

Yes, I am familiar with the fundamental shortcomings and pitfalls of data. To address these issues I implement rigorous data pre-processing before training the LLM. Additionally, post-training, I ensure to tell all stakeholders that the technology functions as a co-pilot rather than an infallible solution.

How does the technology organize continuous improvement when it comes to the use of data?

In the technology, a feedback mechanism will be incorporated to allow stakeholders to provide feedback to the LLM on the answers generated. To accommodate changes in data and insights over time, the LLM is equipped to access external data sources via Retrieval Augmented Generation for information it may not have information about or for validation purposes.

How will the technology keep the insights that it identifies with data sustainable over time?

Yes, I ensure the longevity of insights by maintaining an LLM-agnostic architecture. This allows for the incorporation of the latest LLM models, ensuring the algorithms stay current. As long as the client company continues its collaboration with my internship company, the data remains available, contributing to the sustainability of the technology's insights.

In what way do you consider the fact that data is collected from the users?

No, the technology does not profit from the sale or use of user data

Now that you have thought hard about the impact of data on this technology, what improvements would you like to make? List them below.

N/A

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Inclusivity

Is your technology fair for everyone?

Will everyone have access to the technology?

The technology will be accessible to client companies of the internship company, each utilising it within their specific domains. Given its business-centric focus, the technology is not designed for community-wide access, minimizing its impact on wider populations.

Does this technology have a built-in bias?

With the current clients data being product data, I do not see the possibility of the technology having a built-in bias.

Does this technology make automatic decisions and how do you account for them?

Yes, the technology does make automatic responses to questions. These responses are derived from the training data, where the technology generates answers based on its training set.

If the data provides a clear answer to the question, the technology responds accordingly. However, if the technology lacks information on the answer, there is a possibility of hallucination, where the technology relies on its own knowledge to provide a response.

To account for the responses, we advise client companies to have someone validate the models answers.

Is everyone benefitting from the technology or only a a small group?

Do you see this as a problem? Why/why not?

The main focus of the technology is companies and not the general public. This may result in limited benefits to a specific group rather than widespread societal impact, which is why I do not consider this a problem.

Does the team that creates the technology represent the diversity of our society?

N/A

Now that you have thought hard about the inclusivity of the technology, what improvements would you like to make? List them below.

N/A

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Transparency

Are you transparent about how your technology works?

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

The technology inner architecture can be quite confusing to non technical users but the high-level explanation of how the technology arrives at its answers is available online. For the transparency of the business model of the technology company yes the business model is mentioned to the clients to ensure they understand how we work.

If the technology makes an (algorithmic) decision, is it explained to the users/stakeholders how the decision was reached?

Yes, we ensure that the technology explains its decision-making process to clients and stakeholders, allowing them to understand and potentially influence the decisions if necessary.

Is it possible to file a complaint or ask questions/get answers about this technology?

To file a complaint the internship company will be contacted.

Is the technology (company) clear about possible negative consequences or shortcomings of the technology?

Yes, the technology company communicates the negative consequences during inspiration sessions with the client company.

Now that you have thought hard about the transparency of this technology, what improvements would you like to make? List them below.

N/A

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Sustainability

Is your technology environmentally sustainable?

This category is not applicable for this technology.

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Future

Did you consider future impact?

This category is only partial filled.

What could possibly happen with this technology in the future?

This question has not been answered yet.

Sketch a or some future scenario (s) (20-50 years up front) regarding the technology with the help of storytelling. Start with at least one utopian scenario.

In a utopian scenario 20-50 years into the future, companies enjoy a streamlined communication process with their data. The annoying task of filtering through Excel sheets is eliminated, providing a more efficient and direct means for companies to interact with and extract insights from their data.

Sketch a or some future scenario (s) (20-50 years up front) regarding the technology with the help of storytelling. Start with at least one dystopian scenario.

In a dystopian scenario 20-50 years into the future, the reliance on automated decision-making becomes so rampant that it leads to a significant loss of jobs in the workforce. As companies increasingly depend on the technology for decision making, human input and expertise are undervalued. The streamlined communication with data, instead of fostering collaboration, widens the gap between those who understand and control the technology and those who do not.

Would you like to live in one of this scenario's? Why? Why not?

I would like to live in the utopian scenario because it envisions a world where customer service agents operate more efficiently, and product development is streamlined.

What happens if the technology (which you have thought of as ethically well-considered) is bought or taken over by another party?

A buyout scenario is a concern for the technology company, and in such a situation, I would advise the buyer to uphold the ethical aspects of the technology rather than sacrificing them for substantial profit. If the company indicates a refusal to adhere to ethical considerations, I would be inclined to reconsider proceeding with the deal.

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Impact Improvement: Now that you have thought hard about the future impact of the technology, what improvements would you like to make? List them below.

N/A