The Goldilocks Project

The Goldilocks project is a project where data about the discovery of exoplanets will be analyzed and used in predictive models. This will be done to see if the amount of the discoveries could be increased or the accuracy of the current discoveries could be improved. The main focus will lay on exoplanets that could harbor human life.

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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?
At the moment of creating this project many things are plaguing the world is changing the climate is rapidly changing through human influence, overpopulation is an increasing problem, the Covid-19 pandemic also proved that a virus engineered by bad actors could destroy the world. These are just a few ways how the world could end within now and 100 years that is why humanity should be searching for solutions for these problems but also look for ways if problems can't be fixed on earth. This project would be the first step in solving the possible demise of the earth or human life on earth.

Are you sure that this technology is solving the RIGHT problem?
The problem is that currently, the only reason for discovering new planets is to learn more about space. Relatively speaking not that many people are interested in discovering exoplanets and even less government are willing to invest million to fund observatories or satellites for that purpose.

How is this technology going to solve the problem?
The discovery of exoplanets is only possible with satellites or big observatories on earth and is done decentralized by a lot of different organizations. By analyzing all of the data from all the sources patterns could be found to improve the discovery methods. It could also point to the most successful methods and have organisations heavilier invest into them.

What negative effects do you expect from this technology?
The negative effects could be that there are no clear results and that would mean that there would be no possible improvements to the current methods.

In what way is this technology contributing to a world you want to live in?
This technology would be helping the first step to finding a new world for humans to live on and to possibly save mankind.

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.
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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?

The project is a data analisis so I can't be used to break the law. The only possible way to break the law is fasify the results of the project and use these to lure governments and other organisations into investing in certain methods or companies. At the base that would be Fraud but it would only be possible if someone altered the data or results of the analysis.

Can fakers, thieves or scammers abuse the technology?

No, I don't think that this project would have any harmful influence on sociëty

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

No, I don't think that this project would have any harmful influence against any groups or classes.

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.

It could be used in discussions about if the earth is flat or other conspiracy discussions. These could increase the gap between lower educated people and people that are more sensitive to conspiracies.

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

It couldn't only if the results would be altered or it would be used as conspiracy material.

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

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Privacy

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

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

No to only personal data it registers what organization discovered the exoplanet.

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

No this won't invade anyone's privacy.

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

Yes, it will be compliant because it won't register any personal data.

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

Yes, it will be compliant because it won't register any personal data.

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

Yes, it will be compliant because it won't register any personal data.

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

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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?

The users are the organizations that would look for exoplanets and they could use the project to change or refine their discovery methods.

How does the technology influence the users' autonomy?

It could make it harder to use less effective or not yet proven methods because the project advises otherwise.

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

The technology would have no effect on the users 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.

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Stakeholders

Have you considered all stakeholders?

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

Name of the stakeholder
Goverments

How is this stakeholder affected?
Governments are the biggest funders of space research and that's why they are the main stakeholders of this project.

Did you consult the stakeholder?
Yes

Are you going to take this stakeholder into account?
Yes

Name of the stakeholder
Space agencies

How is this stakeholder affected?
The agencies could use the project to change their strategies in trying to find exoplanets. They could use the project as a reason for launching another satellite for finding exoplanets.

Did you consult the stakeholder?
Yes

Are you going to take this stakeholder into account?
Yes

Name of the stakeholder
Independent observatories/science organisations

How is this stakeholder affected?
These organizations could use the project to change their strategies in trying to find exoplanets.

Did you consult the stakeholder?
No

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?

Name of the stakeholder
Space enthousiast

How is this stakeholder affected?
These people could just look at the project and possibly help with improving the project.

Did you consult the stakeholder?
No

Are you going to take this stakeholder into account?
No

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

One of the big pitfalls is that there is a lot of missing data on the radius and the mass of the planets because it isn't always visible depending on which discovery method is used. If there is a value for the radius or the mass there is a big chance there are 2 error values of how much bigger or smaller the value can be.

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

The data will be refreshed periodically and the analysis will be updated. Over time it could lead to changes in the results and the conclusions that lead out of the results.

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

All the data about the planets are in a NASA dataset that is public and accessible to everybody. The dataset has data from not only NASA but also other agencies and research institutes.

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

Since there wouldn't be much useful user data from usage of the project no data will be collected.

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

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Inclusivity

Is your technology fair for everyone?

Will everyone have access to the technology?

Yes, since all the tools used for the project are free and the project is done in the interest of scientific research the project will be publicized on the internet.

Does this technology have a built-in bias?

The data comes from multiple sources and are checked to be sure they are accurate. The data is also flagged when it's possibly not accurate or correct a so-called controversial flag.

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

The project does use algorithms to predict the most useful ways to find new exoplanets so it does make certain decisions without any supervision, but I don't really think that is biased to any person or group.

Is everyone benefitting from the technology or only a a small group? Do you see this as a problem? Why/why not?

In the short run, only scientists and space agencies have a use for the project but in the long run, the whole of humanity could have a use for the project.

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

Currently, the team only contains one person so no it isn't really diverse.

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

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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 project is for scientific research so there won't be a business model in the project the analysis will be defined.

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

The prediction algorithms that are used to analyze the data are a type of artificial intelligence and are explained to the best extend in the project.

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

After the project is published there will be a few places where discussion can be held like Reddit, Twitter, or on the site where the project is published. These discussions could be used for the improvement of the analysis

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

In the project, it's made clear that the analysis and the prediction algorithms are predictions. So that they can't completely reflect reality.

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

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Sustainability

Is your technology environmentally sustainable?

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

The data is collected via satellites and via ground observatories. All the satellites are powered on solar panels the ground observatories are likely not powered on green energy because they require quite a lot of energy. These ground observatories sometimes are run on renewable energy or partially run on renewable energy but mostly they are still run on fossil fuels. Since most of these observatories are either run by governments or research institutes they are more likely to switch to renewable energy than if they were run privately. Because they have to be an example for the rest of the world.

Do you think alternative materials could have been considered in the technology?

Since it is a digital product there are no materials used.

Do you think the lifespan of the technology is realistic?

Since it is a digital product I hope it lasts forever.

What is the hidden impact of the technology in the whole chain?

The project doesn't really affect the environment but the collection of the data that is used does really uses a lot of energy. Also the most satellites don't last more than 15 years.

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

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Future

Did you consider future impact?

What could possibly happen with this technology in the future?

This project could help space agencies with making decisions on which discovery methods should be used. Once enough good candidate exoplanets are found the project could help choose the one that mankind should go and visit.

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 the project reveals insights in exoplanet discovery that improves the used methods and increases the amount of discoveries and the accuracy of the measurements. In the end this would lead that there are found more planets where human life is feasible.

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, the project wouldn't clear up anything and have no effect on the current methods used. Even with extra data gained by more discoveries, no patterns would be found and no methods could be improved. Finally, the whole idea of life on another planet would be scraped and never used.

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

We would like to live in the utopian scenario because then humans would live on another planet

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

Even if the project was bought by a company what would be weird because it is published for free. Then still the analysis would be useful for the research institutes and space agencies.

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.

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