Ai lip reading model

The model can predict what the person is saying by only looking at the lips of someone.

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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?
Developing a lip-reading model raises ethical concerns, such as privacy, bias and discrimination, accuracy, and fairness. To mitigate risks, it is important to evaluate the training data, test the model rigorously, and seek input from experts and stakeholders.

Are you sure that this technology is solving the RIGHT problem?
No but i hope so, because this tool will only help the people who are for example deaf and this technology can help them understand people better.

How is this technology going to solve the problem?
By helping people who dont have great hearing anymore and they can rely on this technology to help them communicate better with people.

What negative effects do you expect from this technology?
Criminial organisations can try to gather the data from people who have used this technology and are going to sell this data. Maybe the model predicts something wrong what the person is saying and person gets offended.

In what way is this technology contributing to a world you want to live in?
It helps people that have not great hearing to better understand other people by predicting what people are saying. So these people are now more connected to society then before.

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.
Based on the questions and concerns raised, improvements to lip reading technology could include ensuring diverse training data, evaluating performance across different demographic groups, minimizing energy use, considering ethical and privacy implications, expanding applications, and improving accuracy and efficiency through advancements in machine learning.

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?
A lip-reading model could be misused for surveillance, fraud, harassment, or espionage. To prevent misuse, legal and ethical frameworks should be implemented to ensure the technology is used in lawful and ethical ways.

Can fakers, thieves or scammers abuse the technology?
Yes, there is potential for fakers, thieves, or scammers to abuse lip reading technology. For example, someone could use the technology to steal personal information by watching someone enter a password or other confidential information with their lips. Additionally, someone could use the technology to impersonate someone else by mimicking their lip movements and speech patterns. As with any technology, there is always the potential for abuse by those with malicious intent.

Can the technology be used against certain (ethnic) groups or (social) classes?
Yes, there is a risk that lip reading technology could be used against certain ethnic groups or social classes. For example, if the technology is trained primarily on one ethnic group, it may not be as accurate in recognizing lip movements from other ethnicities. This could result in a disproportionate impact on certain groups if the technology is used in law enforcement or security settings. Additionally, if the technology is expensive to use or requires advanced technological skills, it may be less accessible to those from lower socio-economic classes. As with any technology, it's important to consider the potential impact on different groups and take steps to mitigate any unintended consequences.

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.
Bad actors can use lip reading technology to manipulate videos or audio recordings to create false information that could incite tensions between different groups. For example, they could use the technology to create deepfake videos of political leaders or religious figures saying things they did not actually say, in order to create conflict between different groups. They could also use the technology to selectively edit videos or audio recordings to portray certain groups in a negative light, leading to further polarization and division. It's important to be aware of the potential for such misuse and to take steps to prevent it, such as developing technologies to detect deepfakes

or establishing ethical guidelines for the use of lip reading technology in media and other contexts.

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

Bad actors could potentially use this technology to create deepfakes, which are realistic but fake videos or audio recordings that can be used to spread false information or manipulate public opinion. For example, a bad actor could use deepfake technology to create a video of a public figure saying something they never actually said, and then share it online as if it were real. This could be used to damage the reputation of the public figure or to spread false information about a particular issue. In addition, bad actors could use the technology to manipulate images or video footage in a way that distorts the truth, for example, by altering the context or timing of an event to make it appear different than it actually was.

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

To mitigate the impact of bad actors on lip reading technology, improvements could include implementing robust security measures, developing and enforcing ethical guidelines and regulations, conducting regular audits, educating users and stakeholders, promoting transparency in data collection and use, and engaging with diverse groups of stakeholders.

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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?

It captures visual data of a persons face

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

yes, it may capture and process sensitive information about individuals without their consent, such as their spoken words, facial features, and personal identifiers. This could potentially violate the privacy and personal data protection rights of the stakeholders.

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

Yes, because before the data can be used for the model, the person needs to give permission to use his/her video for the model.

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

To mitigate privacy and data protection risks, the technology can: collect only necessary data, anonymize or pseudonymize personal data, be transparent about data use, implement security measures, and give users control over their data.

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

In the future, the collection of personal data could potentially have far-reaching impacts on various aspects of society, including employment, healthcare, education, and even political decision-making. For example, employers could use personal data to make hiring and firing decisions, health insurers could use it to determine premiums and coverage, and educational institutions could use it to make admissions decisions. Additionally, personal data could be used to influence political campaigns and sway public opinion. It is important to consider the potential consequences of the collection and use of personal data, and ensure that appropriate safeguards are in place to protect individuals' privacy and prevent abuse.

Now that you have thought hard about privacy and data protection,

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what improvements would you like to make? List them below.
Keep the data save in a big database, so it is very hard to get acces to the videos by criminal orginasations. The data that is collected is agreed by the user. And try to as much as possible keep the private information anonymous

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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?
Lip-reading technology can affect the identity of users by potentially violating their privacy, causing bias and discrimination, or creating a sense of surveillance. To address these concerns, it's important to implement measures such as privacy policies, bias testing, and stakeholder input to ensure the technology is fair and beneficial for all users.

How does the technology influence the users' autonomy?
The model predicts what someone is saying, so i would say the person using is dependant on the technology. And if for example someone is saying really nice to the person who is using this technology and the model predicts its a insult. The person can get offended and maybe doesnt want talk anymore to that person.

What is the effect of the technology on the health and/or well-being of users?
It can effect that someone gets very angry at someone because the model predicted something wrong of what someone was saying.

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.
Making sure that the model is not biased to one group and ensures that the technology is used in a manner that promotes human dignity, autonomy and privacy

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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
Deaf or not good hearing people

How is this stakeholder affected?
It uses the technology to have a conversation with someone. So the model can have a big impact on that persons life.

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?

Name of the stakeholder
Police

How is this stakeholder affected?
The police can use this technology to maybe see what a person is saying in the interrogation room. In this way they can hear what the person is saying.

Did you consult the stakeholder?
Yes

Are you going to take this stakeholder into account?
Yes

Now that you have thought hard about all stakeholders, what improvements would you like to make? List them below.
1.Ensure accessibility for all individuals
2. Consider employment impact and take steps to mitigate negative effects
3. Promote equitable distribution of benefits and costs
4. Engage with stakeholders throughout development and implementation

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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?
It's important to consider the potential shortcomings and pitfalls of data when developing a lip reading model, such as the quality and representativeness of the training data and the potential for bias. To address these issues, it's important to carefully curate and validate the training data, regularly test and validate the model, and consider ethical and privacy implications when working with personal data.

How does the technology organize continuous improvement when it comes to the use of data?
Regular auditing: Conducting regular audits to review the data being collected and how it's being used can help identify areas for improvement.

User feedback: Soliciting feedback from users can help identify concerns and areas for improvement related to data usage.

Internal training and education: Providing ongoing training and education to employees on data privacy and security can help ensure that they are knowledgeable about best practices.

Collaboration with privacy experts: Collaborating with experts in data privacy and security can provide valuable insights and guidance for improving data usage.

How will the technology keep the insights that it identifies with data sustainable over time?
To keep the insights sustainable over time, the lip reading technology should continuously monitor and evaluate the accuracy and relevance of its data and adjust its algorithms and models accordingly. This can be done through a combination of ongoing training and testing of the technology, as well as regular reviews by experts in the field.

In what way do you consider the fact that data is collected from the users?
When it comes to collecting data from users, it is essential to ensure that the collection is done in a way that is transparent, ethical, and lawful. This means that users should be informed about what data is being collected, how it will be used, and who will have access to it. Users should also be given the option to opt-in or opt-out of data collection, and their privacy should be

protected at all times. The technology doesnt sell 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.

1.Ensure diverse and representative data is used for training and development.

2.Implement robust data privacy and protection policies.

3. Establish transparent data governance practices for accountability and oversight.

4. Prioritize the protection of individual privacy and responsible data use in data sharing policies.

Inclusivity
Is your technology fair for everyone?

Will everyone have access to the technology?
Yes, it will be available for everyone.

Does this technology have a built-in bias?
Yes, lip reading technology can have built-in biases if the training data is not diverse and representative. To address this, it's important to ensure diverse training data and evaluate the model's performance across different demographic groups.

Does this technology make automatic decisions and how do you account for them?
Yes, it can make automatic decisions because it predicts what someone is saying. The model can also predict something wrongly, but the user should report this so the makers can improve it so it will not happan again.

Is everyone benefitting from the technology or only a a small group? Do you see this as a problem? Why/why not?
Everyone can use this, so also people can use it not for good. For example criminal organisations can try to steal the data and sell it or do other things with the data. It can be a big problem if the data gets leaked.

Does the team that creates the technology represent the diversity of our society?
no for now not because i am the only who makes this technology for this project. Also i am not deaf, so i dont represent the target group of this model.

Now that you have thought hard about the inclusivity of the technology, what improvements would you like to make? List them below.
Try to train the model not only on one group but mulitple groups of people. So the model isnt bias.

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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?
no not yet

If the technology makes an (algorithmic) decision, is it explained to the users/stakeholders how the decision was reached?
Yes, by looking at the lips of someone it predicts what it is saying. So stakeholders/users know how to model comes up with the answers.

Is it possible to file a complaint or ask questions/get answers about this technology?
Yes, if the model predicted something wrong, people can send a report back to the company.

Is the technology (company) clear about possible negative consequences or shortcomings of the technology?
yes, because it can also have a negative impact. For example the model predicted something wrong or criminal organisations obtain the data.

Now that you have thought hard about the transparency of this technology, what improvements would you like to make? List them below.
Tell the stakeholders better how the AI comes up with a decision, so more in detail. And explain how this model works to the stakeholders and users.

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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?
To minimize the environmental impact of a lip reading technology, it's important to optimize its direct energy use through energy-efficient hardware and software design, and reduce the carbon footprint of supporting facilities. Additionally, considering the entire life cycle of the technology, such as sustainable materials and responsible disposal, can help reduce its environmental impact.

Do you think alternative materials could have been considered in the technology?
no, at the moment i dont think so. The only materials that are used is a computer and python to make sure the model is being built and deployed on a website.

Do you think the lifespan of the technology is realistic?
Yes, because eventually maybe in the future doctors can find a cure to make sure people who are deaf can hear again.

What is the hidden impact of the technology in the whole chain?
For example, the production of the technology's hardware components may contribute to environmental pollution and resource depletion, and the disposal of its electronic waste may pose a significant environmental hazard. Additionally, the use of the technology may displace workers or shift power dynamics within certain industries or communities.

Now that you have thought hard about the sustainability of this technology, what improvements would you like to make? List them below.
Promote the recycling and responsible disposal of materials used in the technology.

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Future
Did you consider future impact?

What could possibly happen with this technology in the future?
in the future it can lead that the lipreading models become so good, they can help people with not a good hearing real time. So that you have a programm who can automatically can lip sync what someone is saying and tells this to the person

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.
Yes, people who are deaf or not good hearing can have a chip in there brain or somewhere else. In this chip is the model and the model looks at a person and tells the person who is using the technology what he/she is saying.

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.
Yes, the technology can be used the law enforcement is using this model to gather what someone is saying in the interogation room with their lawyer.

Would you like to live in one of this scenario's? Why? Why not?
Yes, the utopian one, because there the model is being used for good. It really helps people who actually need it.

What happens if the technology (which you have thought of as ethically well-considered) is bought or taken over by another party?
At the moment i didint think about this. But i would likely sell the technology for a million dollars.

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.
1. Continuously monitor and assess potential ethical implications.
2. Develop and implement regulations and guidelines for ethical use.
3. Engage stakeholders to ensure societal values are considered.
4. Foster ongoing research to stay ahead of emerging issues.