AI Species Classification

The technology is a machine learning model that identifies species of amphibians and insects, providing information on their characteristics and danger to humans. Realistic expectations involve accurate identification based on training. The technology solves the problem by analyzing images and using pattern recognition. Effectiveness comes from comprehensive data, testing, and expert validation. It complements professional expertise but doesn't replace it.

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Context of use: Education
Level of education: Bachelor

Impact on society

What impact is expected from your technology?

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

The technology aims to solve the problem of accurately identifying species of amphibians and insects and understanding their potential dangers. By addressing this problem, it can improve conservation, research, public safety, education, and inclusivity, making a positive impact on the world.

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

Understanding the deeper issues and root causes of the problem is important. While the technology addresses the challenge of identifying species, it's essential to explore broader factors using techniques like the Five Whys. This ensures that the solution goes beyond surface-level symptoms and considers the underlying causes for a more effective resolution.

How is this technology going to solve the problem?

The technology solves the problem by utilizing machine learning algorithms and image recognition techniques to accurately identify species of amphibians and insects. It learns from a large dataset, recognizes patterns, and provides relevant information. Extensive testing and evaluation are conducted to assess accuracy and reliability. The technology is grounded in scientific theory and prior research. Ongoing evaluation and refinement are essential for continuous improvement. While limitations exist, combining the technology with human expertise is recommended for optimal outcomes.

What negative effects do you expect from this technology?

Possible negative effects of the technology include overreliance without expert validation, biases and inaccuracies in data, privacy concerns, and disruption of traditional expertise. To mitigate these effects, proactive measures like involving experts, addressing biases, ensuring privacy, and promoting responsible use are important. Ongoing monitoring and adaptation help maintain a positive impact.

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

The technology impacts daily lives by providing accurate species identification and enhancing safety and awareness. In the long term, it contributes to conservation, scientific research, and education. It aligns with values such as environmental stewardship and public safety. Compliance with professional values and ethical guidelines should be ensured.

Considering personal values is important. Thorough assessments and responsible development are necessary.

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.

To improve the impact of this technology:

1. Make it more accurate and fair.
2. Collaborate with diverse groups for better data.
3. Include local knowledge and fill data gaps.
4. Promote responsible use and involve human experts.
5. Ensure privacy and follow ethical guidelines.

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?

In the wrong hands, the technology could be misused to identify and track individuals for purposes of harassment, stalking, or intimidation, which is illegal and harmful.

Bad actors could exploit the technology to create false identities or forge documents by manipulating species identification data, potentially facilitating fraud or identity theft.

Can fakers, thieves or scammers abuse the technology?

Bad actors could exploit the technology's outputs to manipulate social perceptions or deceive individuals by providing false information about species' behavior, characteristics, or potential dangers. This could be used to instill fear, create panic, or manipulate public opinion.

Bad actors could misuse the technology to target individuals by falsely associating them with harmful or dangerous species, spreading false rumors, or using species identification as a means to insult or degrade others.

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

Racial Bias: If the training data used to develop the technology is biased, it could result in inaccurate or discriminatory identifications. For example, if the dataset primarily consists of images of certain racial groups, the technology may struggle to accurately identify or provide relevant information for other racial groups.

Gender Bias: Similarly, if the technology is trained on a dataset that is predominantly skewed towards specific genders, it may exhibit biases in identification or information provision. For instance, it might disproportionately associate certain gendered characteristics or dangers with certain species, leading to gender-specific stereotypes or misinterpretations.

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 may misuse the technology to pit ethnic, social, political, or religious groups against each other. They could manipulate the technology's outputs by associating specific species or characteristics with certain groups,

spreading disinformation, fostering prejudice and discrimination, and sowing discord and polarization. Responsible development, ethical use, and proactive measures against misinformation are essential to mitigate this risk and promote a more harmonious society.

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

The technology could be misused to generate false species identifications, spread misinformation about species, manipulate images or videos, and use automated systems to disseminate false narratives. Implementing fact-checking measures, promoting media literacy, and encouraging responsible information sharing can help mitigate these risks.

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 risks:
1. Enhance technology: Improve security, address biases, and prioritize ethical design.
2. Contextual measures: Support regulations, raise awareness, and collaborate with experts.
3. Promote responsible use: Verify users, establish reporting systems, and continually evaluate and enhance the technology.

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?

The technology itself does not register personal data. However, personal data may indirectly be associated with the technology if users voluntarily provide personal information or if the app collects location data. It is important to handle personal data in compliance with privacy laws, ensuring informed consent and data security.

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

The technology itself does not inherently invade the privacy of stakeholders. However, privacy concerns may arise depending on how personal information is collected, location tracking practices, and data storage and security. It is important to prioritize privacy-by-design principles, obtain consent, and comply with relevant privacy laws to protect stakeholder privacy.

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

- Evaluate the type of data collected and ensure data minimization practices.
- Establish a lawful basis for data processing, such as user consent or legitimate interests.
- Implement robust data security measures to protect user data.
- Inform users about their rights regarding their personal data.
- Develop a clear and comprehensive privacy policy.
- Implement appropriate measures when sharing or transferring data.

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

Privacy by design is an important principle that focuses on data minimization and continually improving privacy practices. The technology should assess whether all processed personal data is necessary for its functionality (data minimalization). It should also consider principles like anonymization, privacy as the default, user control, transparency, and regular assessment and improvement to promote privacy protection.

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

The technology has the potential to generate data that could have long-term

consequences for individuals, affecting their reputations, freedoms, and future opportunities. It is crucial to handle this data responsibly, implementing strong privacy and security measures, obtaining informed consent, and considering the potential impact on individuals' privacy and reputations.

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

- Minimize data collection to only essential information.
- Incorporate privacy by design principles from the start.
- Enhance consent and transparency for data usage.
- Implement robust security measures to protect personal data.
- Empower users with control over their data and rights.
- Educate and raise awareness about privacy risks.
- Ensure compliance with privacy laws and regulations.

Human values

How does the technology affect your human values?

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

The technology enhances the identity of users by providing them with knowledge and awareness about different species of amphibians and insects. It promotes a sense of environmental stewardship and connection to nature, shaping the user's identity as environmentally conscious individuals.

How does the technology influence the users' autonomy?

The technology enhances users' autonomy by providing them with accurate information and insights about different species of amphibians and insects. It empowers users to make informed decisions and take appropriate actions based on their own preferences and needs. By offering knowledge and awareness, the technology enables users to exercise greater control and autonomy in their interactions with the natural world.

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

The technology has a positive effect on the health and well-being of users. By providing information about the characteristics and potential danger level of different species of amphibians and insects, it helps users make informed decisions that can contribute to their safety and prevent potential harm. This knowledge can increase users' confidence when encountering these species, reducing anxiety and stress related to potential risks. Additionally, by promoting a better understanding of the natural environment, the technology can foster a deeper connection with nature, which is known to have positive effects on mental and emotional 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.

Implement features that allow users to customize the information and alerts provided by the technology, giving them more control over their interactions and choices.
Incorporate educational components within the technology to raise awareness about the importance of biodiversity conservation and promote responsible interactions with the natural environment.

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
Intended User

How is this stakeholder affected?
They benefit from accurate species identification and information about potential dangers, enhancing their knowledge, safety, and conservation efforts.

Did you consult the stakeholder?
No

Are you going to take this stakeholder into account?
Yes

Name of the stakeholder
Researchers and Experts

How is this stakeholder affected?
They may be directly involved in providing expertise, contributing to the development of the technology, or collaborating on data collection and analysis.

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
Conservation Organizations

How is this stakeholder affected?
They can leverage the technology to support their efforts in preserving biodiversity and protecting endangered species.

Did you consult the stakeholder?
No

Are you going to take this stakeholder into account?
No

Name of the stakeholder
Educational Institutions

How is this stakeholder affected?
hey can benefit from the technology for educational purposes, enabling students and educators to learn about different species of amphibians and insects.

Did you consult the stakeholder?
No

Are you going to take this stakeholder into account?
No

Name of the stakeholder
Data Protection Authorities

How is this stakeholder affected?
They may have an interest in ensuring that the technology complies with data protection regulations and safeguards user privacy.

Did you consult the stakeholder?
No

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.
Provide education and awareness.
Engage stakeholders for input and consultation.
Ensure compliance with privacy and data protection regulations.
Continuously evaluate and improve.

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?

The technology takes into account the fundamental shortcomings and pitfalls of data. Measures are in place to address subjectivity, incompleteness, biases, and the complexity of reality. Continuous learning and understanding are prioritized to improve the technology's approach to data and enhance its effectiveness.

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

The technology incorporates feedback loops to gather insights and improve data handling. It embraces continuous improvement, remaining open to change and adapting to evolving data and insights. By actively seeking feedback and refining its processes, the technology aims to minimize biases, enhance accuracy, and ensure up-to-date insights.

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

To ensure the sustainability of insights, the technology considers long-term legal permissions for data processing, maintains data and algorithms up to date, and ensures data availability even if the source generator changes. These measures enhance the reliability and longevity of the predictions.

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

The technology considers options to give users the right to share in the profits generated from their data. Transparency, user ownership and control over data, and mechanisms for fair compensation are important factors in treating users fairly.

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

Improvements can be made in the technology by enhancing data quality, implementing robust data governance, facilitating continuous learning and adaptation, and empowering users in the data process. These measures contribute to better data utilization and responsible use of the technology.

Inclusivity

Is your technology fair for everyone?

This category is not applicable for this technology.

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?

Transparency is important in technology. Users should easily find information about how the technology works, understand why it behaves in a certain way, and have clear explanations of its goals and business model. Transparent communication builds trust and empowers users to make informed decisions.

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

Users and stakeholders are provided with explanations on how decisions are reached, promoting transparency and accountability. The technology ensures that the reasoning behind the decisions and the factors considered in the process are clearly communicated. By offering these explanations, the goal is to build trust and enable users to understand the outcomes of the algorithmic decisions.

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

The company prioritizes open communication and accessibility, ensuring easy reachability, procedures for complaints, and availability for answering questions about the technology.

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

The technology is transparent to users and stakeholders regarding possible negative consequences or shortcomings. It is recognized that while the system may be fair in itself, it can still have negative real-world consequences. The awareness of these consequences is communicated to users and stakeholders.

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

Enhancements can be made in technology, context, and use to improve transparency. This includes providing clear explanations of how the technology works, communicating potential negative effects, and implementing effective complaint procedures.

Sustainability

Is your technology environmentally sustainable?

This category is not applicable for this technology.

Future

Did you consider future impact?

What could possibly happen with this technology in the future?

The widespread use of the technology by 100 million people can lead to increased awareness, behavioral changes, and a shift in societal norms towards biodiversity conservation. It can foster collaborative communities and encourage responsible behaviors. However, challenges such as equitable access and addressing privacy concerns need to be considered.

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 future utopian scenario, the machine learning model for identifying species of amphibians and insects has become widely adopted. People use the technology on their smartphones to instantly recognize and learn about different species they encounter. This leads to a citizen science movement, with millions of individuals contributing to a comprehensive database of species. Communities prioritize biodiversity conservation, incorporating it into daily life and education. Collaboration between scientists and the public results in targeted conservation efforts and sustainable coexistence with nature.

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 future scenario, the machine learning model for identifying species of amphibians and insects has evolved into a highly centralized and controlled system. The technology is owned and controlled by a few powerful corporations who exploit it for profit and control. Access to the technology is limited to those who can afford it, creating a digital divide and exacerbating inequalities. The data collected from users is monetized without their consent, leading to privacy breaches and exploitation. The technology becomes a tool for surveillance and manipulation, as people's movements and activities are constantly monitored. The environment suffers as the focus shifts from conservation to commercial interests, leading to the destruction of habitats and loss of biodiversity. People's connection with nature diminishes, and the delicate balance of ecosystems is disrupted.

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

I would like to live in the first scenario since this app can be very educating in the future. give people interest about biodiversity what will help improve it.

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

In the utopian scenario, where the app for species identification and information is widely adopted, I would choose to live in that world. The app's educational aspect and promotion of biodiversity conservation align with my values, making it an appealing choice for me. Being part of a society that values and actively works towards protecting biodiversity would create a more sustainable and balanced future.

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.

Enhance accessibility: Ensure that the app is accessible to a wider range of users, including those with disabilities or limited technological access.
Expand species coverage: Continuously improve the app's ability to identify and provide information on a broader range of amphibians and insects, including rare and endangered species.