COMMUNICATING WITH NON-EXPERTS WHEN USING MACHINE LEARNING TECHNIQUES TO ENSURE TRANSPARENCY

WHAT INFORMATION MIGHT YOUR AUDIENCE FIND HELPFUL?	WHAT INFORMATION MIGHT YOUR AUDIENCE NOT FIND HELPFUL?
Take a minute to consider what *you* would like to know about a project if you were approached by someone who wanted to tell you about their machine learning research. Consider this from the perspective of the audience you are trying to communicate with…	Take a minute to consider what information you may not find helpful if you were approached by someone who wanted to tell you about their machine learning research from the perspective of the audience you are trying to communicate with…
MEMBERS OF THE PUBLIC*	
1. What is machine learning? 2. Why did you choose to use machine learning over other methods? 3. What is the aim of the research? 4. Why is the study important, and what will you do with the results? 5. Were there any limitations to your research, or the machine learning methods that you used? 6. How did you access the data and how will it be used? 7. Why did you choose to use this dataset? 8. Will the outcome of the research affect groups or individuals (either positively or negatively)? 9. Is my personal information safe? How is my data being stored and can it be reused for other purposes? 10. Will anyone be identifiable from the data or the research outcomes?	1. What will the typical lay person learn from being presented with an algorithm? Are they likely to understand it, or is there a more understandable way of presenting this to a lay audience? 2. Too much information! It may put users off if there is too much information, or if the information presented is hard to read. How can you present the information in a way that is concise and easy to read?
POLICY AND DECISION-MAKERS*	
1. What is the key message in regard to policy? What was the key policy challenge that the research seeks to address? 2. Why is this research important for policy? What are its main implications? 3. Are the policy implications of the research short term or long term? 4. What are the key findings from the research? 5. How have you arrived at these findings? What methods were used? 6. What will happen with the data collected, and how will it be used going forward? 7. Are there any limitations/assumptions to the research? 8. What are the key policy recommendations? 9. It may also be beneficial to consider the views of key stakeholders, particularly in relation to	1. Much like the public audience, policy and decision-makers are unlikely to gain from being presented with the inner-workings of your algorithm, or the granular specifics of your methods. Instead, a brief, high-level summary of how you have come to your findings may be more useful. 2. Policy and decision-makers are likely to be limited on time, and so it is critical to keep communication with them succinct. How can you present the information in a way that is concise and easy to read or visualise? 3. How can you present your research findings in a way that is relevant to policy, and which clearly highlights its aims, its importance, its limitations, and its implications?

the public. For example, if a policy decision was made on the basis of your project, would the public be comfortable with this?	
OTHER STATISTICAL GROUPS (WHO ARE NOT MACHINE LEARNING DATA SCIENTISTS)*	
1. What training data was used to teach the system? 2. How did you obtain and quality assure the data that you used to teach the system? 3. How did you train the system (which methods did you use throughout the process)? 4. Were there any limitations or biases in the training data that may have affected the results? How have these been mitigated? 5. What patterns or recommendations have emerged from the data? How did the machine learning model come to this conclusion? 6. What are the assumptions related to this recommendation? 7. How much better is this approach than others that could have been used? Are there any improvements that could be made to the current approach? 8. How was the model evaluated/compared against other models? 9. Are there plans in place to continue the work with updated data? 10. Have you shared your code for others to use and adapt?	1. This group may have a more technical understanding of machine learning, or statistical processes, and so more detailed information regarding how the system was trained, and how it reached the results it did could be useful. 2. Think about what you have been asked to do and why, and what the benefits of this are. You can then tailor your communication with this in mind.

HOW CAN WE USE THIS INFORMATION TO AID OUR RESEARCH?

Publishing your algorithms for people to see is really useful and goes some way to ensuring transparency. However, many people may not be able to understand or interpret an algorithm. Making your algorithm accessible is not enough to make your research transparent! Perhaps you could consider linking your audiences to the published algorithm should they want to see it but consider the questions in the left-hand column to better explain what it means to your audience.

You will need to communicate your research to different audiences, and they will likely have varying levels of understanding. It is important to tailor your communications with each group to ensure transparency, however, by considering the questions above in relation to a non-expert user, you may find it easier to communicate this information to all stakeholders.

By placing ourselves in the shoes of a person with no knowledge of machine learning (or by practicing explaining our work to people with no knowledge of it), not only are we able to better communicate with this group of users, but we can also:

- begin to think more transparently about our work
- better communicate with a lay audience
- ensure explainability
- better understand our own research
- improve the impact of our work on different audiences

*These questions have been designed as a starting point for conversations with different key groups, and should provide a good starting point when thinking about how to communicate with different audiences. As part of our user testing of these, we would welcome feedback on how these may be improved.