# Montgomery County Community College Tech Conference

September 24, 2021

## Keynote: Deepfake Videos and Impacts on Education – Follow Up Questions

| | Question | Answer |
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| 1 | How about the correlation between verbal and non-verbal communication - is it likely that a manipulated image will show some odd non-verbal expressions? | The correlation between verbal and non-verbal communication is an interesting dimension to explore. However, Deep Fakes are indeed able to accurately model non-verbal features such as eye blinking, head movement, etc. Therefore, non-verbal patterns alone may not be sufficient to detect whether media content is fake. |
| 2 | As deepfakes become easier to create and better in quality, do you predict a greater business need for both verification of legitimacy and detection of deepfakes? | Absolutely. This is one of our major motivations for investigating their impact on society. Deep Fakes may present challenges not only for social media enterprises, but for business organizations as a whole. |
| 3 | When considering the US population's heightened exposure to political media and awareness to dis/misinformation, do you believe that vulnerabilities will vary more significantly between countries? | Our research has shown that there is a significant portion of the US is still very susceptible to deepfakes – that, for most populations, it's essentially a coin toss whether they detect a fake video. So, there is more work to do in this country. That said, there are many reasons why we might expect variation across countries. Many countries do not have the resources to address risks like this – technically and/or through education – and they might be more vulnerable than the United States. Other countries may have more effective misinformation campaigns and education and could be less susceptible. More research would need to be done to understand the cross-country variation and the drivers of that variation. |
| 4 | Are schools checking resource material before adding content to a library or the video is used as a classroom resource? | We do not know of any comprehensive surveys that try to understand how teachers vet their instructional resources for misinformation. In our research, we surveyed teachers and found that they were also susceptible to believing |

| | | deepfakes. Regardless, it seems just as important to educate educators about these risks as it does to educate students. |
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| | | With tough budget choices, the number of librarians in K-12 schools across the nations declined by 20% over the last 10 years. Librarians made key decisions on educational materials for a school, and with digital learning becoming more of the norm, they may be a good fit for helping schools determine an approach for resource materials.  A rethinking of this role could be a solution. |
| 5 | What would be a good way to start and teach student AI literacy and making them more aware about how to be a critical consumer of the information? Thanks! | There are a range of courses on media literacy (sometimes specifically about AI or deepfakes) for students at all levels; however, there is little data to show their efficacy. We intend to explore this further in a follow-up project. One source for media literacy education is the National Association of Media Literacy Education (https://namle.net/). There is also much to learn from RAND Group's Truth Decay project. (https://www.rand.org/research/projects/truth-decay.html) |
| 6 | You can fake a video with deepfake tech, but it would be exponentially harder to fake multiple videos from multiple angles that perfectly correlate, right? | AI algorithms are now able to generate 3D models of a face using only a 2D image (e.g., here). These capabilities may soon extend to Deep Fake video generation |
| 7 | We hear about STEM education. Is not this issue a great argument that liberal arts and humanities is just as important? Philosophy, sociology, history, literature- all to build empathy and context? | Many education stakeholders advocate for developing well-rounded students. Challenger Center's organizational focus is STEM education, and this project is focused on deepfakes of STEM information. It is important to us that all students in our society are critical thinkers that are equipped to discern real from fake science information. A solid foundation in history and civics, for example, helps students to become critical thinkers. Further, great technical advances come from innovative thinking which can be nurtured in the humanities.

We are not aware of studies that look at how studying the humanities and social sciences writ large can affect a person's susceptibility. We |

| | | were surprised that level of education and being in a science field (and by extension not being in a science field) did not have detectable effects on susceptibility. That being said, more nuanced research still needs to be done and you raise some good potential avenues. |
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| 8 | Do you see this as a political problem, a corporate liability problem, a public health problem, and education problem, or something else? | Yes.  Deepfakes can have negative impacts to all these realms, and therefore to the well-being of society and individuals.  To ground this study, we chose climate change; however, the technology can be applied to many issues (e.g., elections, vaccines, etc.) in many contexts, so it has the capacity to create problems in all these spheres. Still, at its core, we see the solution as one to educate teachers, students, and the public. |
| 9 | Can AI detect deep fakes? How? | There are some AIs that are capable of detecting the current crop of Deep Fakes. However, it is a "cat and mouse" game, as the next iteration of Deep Fakes may reduce the performance of these AI Deep Fake detection algorithms. |
| 10 | How well could the AI technology manipulate a small portion of a video within a longer video? Would this make it more difficult for people to identify a modified video? | This is a great question. We have considered moving beyond "fake/real" to "plausible", which may include only a slight component of the video being altered by AI. This may indeed increase the difficulty in determining what is real/fake. |
| 11 | Does the Deepfake technology have the ability to change the voice? | Yes, there are Deep Fake voice generators. Some are also quite good at mimicking the voice of a famous celebrity. |