116TH CONGRESS
1ST SESSION

H. R. 4355

AN ACT

To direct the Director of the National Science Foundation to support research on the outputs that may be generated by generative adversarial networks, otherwise known as deepfakes, and other comparable techniques that may be developed in the future, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the ''Identifying Outputs of Generative Adversarial Networks Act'' or the ''IOGAN Act''.

SEC. 2. FINDINGS.

Congress finds the following:

(1) Research gaps currently exist on the underlying technology needed to develop tools to identify authentic videos, voice reproduction, or photos from manipulated or synthesized content, including those generated by generative adversarial networks.

(2) The National Science Foundation's focus to support research in artificial intelligence through computer and information science and engineering, cognitive science and psychology, economics and game theory, control theory, linguistics, mathematics, and philosophy, is building a better understanding of how new technologies are shaping the society and economy of the United States.

(3) The National Science Foundation has identified the ''10 Big Ideas for NSF Future Investment'' including ''Harnessing the Data Revolution'' and the ''Future of Work at the Human-Technology

Frontier'', in with artificial intelligence is a critical component.

(4) The outputs generated by generative adversarial networks should be included under the umbrella of research described in paragraph (3) given the grave national security and societal impact potential of such networks.

(5) Generative adversarial networks are not likely to be utilized as the sole technique of artificial intelligence or machine learning capable of creating credible deepfakes and other comparable techniques may be developed in the future to produce similar outputs.

SEC. 3. NSF SUPPORT OF RESEARCH ON MANIPULATED OR SYNTHESIZED CONTENT AND INFORMATION SECURITY.

The Director of the National Science Foundation, in consultation with other relevant Federal agencies, shall support merit-reviewed and competitively awarded research on manipulated or synthesized content and information authenticity, which may include—

(1) fundamental research on digital forensic tools or other technologies for verifying the authenticity of information and detection of manipulated or

synthesized content, including content generated by generative adversarial networks;

(2) fundamental research on technical tools for identifying manipulated or synthesized content, such as watermarking systems for generated media;

(3) social and behavioral research related to manipulated or synthesized content, including the ethics of the technology and human engagement with the content;

(4) research on public understanding and awareness of manipulated and synthesized content, including research on best practices for educating the public to discern authenticity of digital content; and

(5) research awards coordinated with other federal agencies and programs including the Networking and Information Technology Research and Development Program, the Defense Advanced Research Projects Agency and the Intelligence Advanced Research Projects Agency.

SEC. 4. NIST SUPPORT FOR RESEARCH AND STANDARDS ON GENERATIVE ADVERSARIAL NETWORKS.

(a) IN GENERAL.—The Director of the National Institute of Standards and Technology shall support research for the development of measurements and stand-

ards necessary to accelerate the development of the technological tools to examine the function and outputs of generative adversarial networks or other technologies that synthesize or manipulate content.

(b) OUTREACH.—The Director of the National Institute of Standards and Technology shall conduct outreach—

(1) to receive input from private, public, and academic stakeholders on fundamental measurements and standards research necessary to examine the function and outputs of generative adversarial networks; and

(2) to consider the feasibility of an ongoing public and private sector engagement to develop voluntary standards for the function and outputs of generative adversarial networks or other technologies that synthesize or manipulate content.

SEC. 5. REPORT ON FEASIBILITY OF PUBLIC-PRIVATE PARTNERSHIP TO DETECT MANIPULATED OR SYNTHESIZED CONTENT.

Not later than 1 year after the date of the enactment of this Act, the Director of the National Science Foundation and the Director of the National Institute of Standards and Technology shall jointly submit to the Committee on Space, Science, and Technology of the House of Rep-

resentatives and the Committee on Commerce, Science, and Transportation a report containing—

(1) the Directors' findings with respect to the feasibility for research opportunities with the private sector, including digital media companies to detect the function and outputs of generative adversarial networks or other technologies that synthesize or manipulate content; and

(2) any policy recommendations of the Directors that could facilitate and improve communication and coordination between the private sector, the National Science Foundation, and relevant Federal agencies through the implementation of innovative approaches to detect digital content produced by generative adversarial networks or other technologies that synthesize or manipulate content.

SEC. 6. GENERATIVE ADVERSARIAL NETWORK DEFINED.

In this Act, the term ''generative adversarial network'' means, with respect to artificial intelligence, the machine learning process of attempting to cause a generator artificial neural network (referred to in this paragraph as the ''generator'' and a discriminator artificial neural network (referred to in this paragraph as a ''discriminator'') to compete against each other to become more accurate in their function and outputs, through

which the generator and discriminator create a feedback loop, causing the generator to produce increasingly higher-quality artificial outputs and the discriminator to increasingly improve in detecting such artificial outputs.

Passed the House of Representatives December 9, 2019.

Attest:

Clerk.

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