AMENDMENT IN THE NATURE OF A SUBSTITUTE
TO H.R. 4355
OFFERED BY M_.

[Page and line numbers refer to GANS_01 with timestamp of September 17, 2019 at 2:11PM posted by the Committee on Science, Space, and Technology]

Strike all after the enacting clause and insert the following:

1 SECTION 1. SHORT TITLE.
2   This Act may be cited as the “Identifying Outputs of Generative Adversarial Networks Act” or the “IOGAN Act”.

5 SEC. 2. FINDINGS.
6   Congress finds the following:
7       (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.
8       (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, mathem-
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 re-
search on manipulated or synthesized content and infor-
mation authenticity, which may include—

(1) fundamental research on digital forensic
tools or other technologies for verifying the authen-
ticity of information and detection of manipulated or
synthesized content, including content generated by
generative adversarial networks;

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

(3) research awards coordinated with other fed-
eral agencies and programs including the Net-
working and Information Technology Research and
Development Program, the Defense Advanced Re-
search Projects Agency and the Intelligence Ad-
vanced Research Projects Agency.

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

(a) IN GENERAL.—The Director of the National In-
stitute of Standards and Technology shall support re-
search for the development of measurements and stand-
ards necessary to accelerate the development of the tech-
nological tools to examine the function and outputs of gen-
erative 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 one 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 Representatives 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.

Amend the title so as to read: “A bill to direct the Director of the National Science Foundation to support research on manipulated or synthesized content and information authenticity, including the output of generative adversarial networks, otherwise known as deepfakes, and for other purposes”.