Union Calendar No.

116TH CONGRESS
1ST SESSION

H. R. 4355

[Report No. 116–]

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.

_____

IN THE HOUSE OF REPRESENTATIVES

SEPTEMBER 17, 2019

Mr. GONZALEZ of Ohio (for himself, Ms. STEVENS, Mr. BAIRD, and Ms. HILL of California) introduced the following bill; which was referred to the Committee on Science, Space, and Technology

OCTOBER --, 2019

Reported with an amendment, committed to the Committee of the Whole House on the State of the Union, and ordered to be printed

[Strike out all after the enacting clause and insert the part printed in italic]

[For text of introduced bill, see copy of bill as introduced on September 17, 2019]

A BILL

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.

1   *Be it enacted by the Senate and House of Representa-*

2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4   *This Act may be cited as the "Identifying Outputs of*

5 *Generative Adversarial Networks Act" or the "IOGAN Act".*

6 **SEC. 2. FINDINGS.**

7   *Congress finds the following:*

8   *(1) Research gaps currently exist on the under-*

9   *lying technology needed to develop tools to identify*

10   *authentic videos, voice reproduction, or photos from*

11   *manipulated or synthesized content, including those*

12   *generated by generative adversarial networks.*

13   *(2) The National Science Foundation's focus to*

14   *support research in artificial intelligence through*

15   *computer and information science and engineering,*

16   *cognitive science and psychology, economics and game*

17   *theory, control theory, linguistics, mathematics, and*

18   *philosophy, is building a better understanding of how*

19   *new technologies are shaping the society and economy*

20   *of the United States.*

21   *(3) The National Science Foundation has identi-*

22   *fied the "10 Big Ideas for NSF Future Investment"*

23   *including "Harnessing the Data Revolution" and the*

24   *"Future of Work at the Human-Technology Frontier",*

25   *in with artificial intelligence is a critical component.*

1   *(4) The outputs generated by generative adver-*
2   *sarial networks should be included under the umbrella*
3   *of research described in paragraph (3) given the grave*
4   *national security and societal impact potential of*
5   *such networks.*

6   *(5) Generative adversarial networks are not like-*
7   *ly to be utilized as the sole technique of artificial in-*
8   *telligence or machine learning capable of creating*
9   *credible deepfakes and other comparable techniques*
10   *may be developed in the future to produce similar*
11   *outputs.*

12   **SEC. 3. NSF SUPPORT OF RESEARCH ON MANIPULATED OR**
13   **SYNTHESIZED CONTENT AND INFORMATION**
14   **SECURITY.**

15   *The Director of the National Science Foundation, in*
16   *consultation with other relevant Federal agencies, shall sup-*
17   *port merit-reviewed and competitively awarded research on*
18   *manipulated or synthesized content and information au-*
19   *thenticity, which may include—*

20   *(1) fundamental research on digital forensic tools*
21   *or other technologies for verifying the authenticity of*
22   *information and detection of manipulated or syn-*
23   *thesized content, including content generated by gen-*
24   *erative adversarial networks;*

1   *(2) fundamental research on technical tools for*

2   *identifying manipulated or synthesized content, such*

3   *as watermarking systems for generated media;*

4   *(3) social and behavioral research related to ma-*

5   *nipulated or synthesized content, including the ethics*

6   *of the technology and human engagement with the*

7   *content;*

8   *(4) research on public understanding and aware-*

9   *ness of manipulated and synthesized content, includ-*

10   *ing research on best practices for educating the public*

11   *to discern authenticity of digital content; and*

12   *(5) research awards coordinated with other fed-*

13   *eral agencies and programs including the Networking*

14   *and Information Technology Research and Develop-*

15   *ment Program, the Defense Advanced Research*

16   *Projects Agency and the Intelligence Advanced Re-*

17   *search Projects Agency.*

18 ***SEC. 4. NIST SUPPORT FOR RESEARCH AND STANDARDS ON***

19   ***GENERATIVE ADVERSARIAL NETWORKS.***

20   *(a) IN GENERAL.—The Director of the National Insti-*

21 *tute of Standards and Technology shall support research for*

22 *the development of measurements and standards necessary*

23 *to accelerate the development of the technological tools to*

24 *examine the function and outputs of generative adversarial*

1 *networks or other technologies that synthesize or manipulate*

2 *content.*

3   *(b) OUTREACH.—The Director of the National Insti-*

4 *tute of Standards and Technology shall conduct outreach—*

5   *(1) to receive input from private, public, and*

6   *academic stakeholders on fundamental measurements*

7   *and standards research necessary to examine the*

8   *function and outputs of generative adversarial net-*

9   *works; and*

10   *(2) to consider the feasibility of an ongoing pub-*

11   *lic and private sector engagement to develop vol-*

12   *untary standards for the function and outputs of gen-*

13   *erative adversarial networks or other technologies that*

14   *synthesize or manipulate content.*

15 ***SEC. 5. REPORT ON FEASIBILITY OF PUBLIC-PRIVATE PART-***

16   ***NERSHIP TO DETECT MANIPULATED OR SYN-***

17   ***THESIZED CONTENT.***

18   *Not later than one year after the date of the enactment*

19 *of this Act, the Director of the National Science Foundation*

20 *and the Director of the National Institute of Standards and*

21 *Technology shall jointly submit to the Committee on Space,*

22 *Science, and Technology of the House of Representatives*

23 *and the Committee on Commerce, Science, and Transpor-*

24 *tation a report containing—*

1   *(1) the Directors' findings with respect to the*

2 *feasibility for research opportunities with the private*

3 *sector, including digital media companies to detect*

4 *the function and outputs of generative adversarial*

5 *networks or other technologies that synthesize or ma-*

6 *nipulate content; and*

7   *(2) any policy recommendations of the Directors*

8 *that could facilitate and improve communication and*

9 *coordination between the private sector, the National*

10 *Science Foundation, and relevant Federal agencies*

11 *through the implementation of innovative approaches*

12 *to detect digital content produced by generative adver-*

13 *sarial networks or other technologies that synthesize*

14 *or manipulate content.*

15 ***SEC. 6. GENERATIVE ADVERSARIAL NETWORK DEFINED.***

16 *In this Act, the term "generative adversarial network"*

17 *means, with respect to artificial intelligence, the machine*

18 *learning process of attempting to cause a generator artifi-*

19 *cial neural network (referred to in this paragraph as the*

20 *"generator" and a discriminator artificial neural network*

21 *(referred to in this paragraph as a "discriminator") to*

22 *compete against each other to become more accurate in their*

23 *function and outputs, through which the generator and dis-*

24 *criminator create a feedback loop, causing the generator to*

25 *produce increasingly higher-quality artificial outputs and*

1 *the discriminator to increasingly improve in detecting such*

2 *artificial outputs.*