

**AMENDMENT IN THE NATURE OF A SUBSTITUTE  
TO H.R. 9334  
OFFERED BY MS. LOFGREN OF CALIFORNIA**

Strike all after the enacting clause and insert the following:

**1 SECTION 1. SHORT TITLE.**

2       This Act may be cited as the “Workforce for AI Trust  
3 Act”.

**4 SEC. 2. NSF ARTIFICIAL INTELLIGENCE RESEARCH AND  
5 EDUCATION; NIST ARTIFICIAL INTELLIGENCE  
6 GOVERNANCE WORKFORCE.**

7       (a) DEFINITION.—Section 5002 of the National Arti-  
8 ficial Intelligence Initiative Act of 2020 (15 U.S.C. 9401;  
9 enacted as part of title LIV of division E of the William  
10 M. (Mac) Thornberry National Defense Authorization Act  
11 for Fiscal Year 2021 (Public Law 116–283)) is amended  
12 by adding at the end the following new paragraph:

13               “(12) NATIONAL LABORATORY.—The term ‘Na-  
14 tional Laboratory’ has the meaning given such term  
15 in section 2 of the Energy Policy Act of 2005 (42  
16 U.S.C. 15801).”.

1 (b) FELLOWSHIPS.—Subsection (e) of section 5401  
2 of the National Artificial Intelligence Initiative Act of  
3 2020 (15 U.S.C. 9451) is amended—

4 (1) in paragraph (2)—

5 (A) in the heading, by striking “FAC-  
6 ULTY”; and

7 (B) by adding at the end the following new  
8 subparagraph:

9 “(D) INTERDISCIPLINARY ARTIFICIAL IN-  
10 TELLIGENCE FELLOWSHIPS.—

11 “(i) IN GENERAL.—The Director of  
12 the National Science Foundation may sup-  
13 port graduate and postdoctoral research  
14 fellowships for students and postdoctoral  
15 researchers from across disciplines, includ-  
16 ing social science disciplines and the hu-  
17 manities, by making awards through eligi-  
18 ble institutions of higher education for re-  
19 search and related activities related to the  
20 trustworthy design, development, training,  
21 deployment, evaluation, and understanding  
22 of artificial intelligence.

23 “(ii) USE OF AWARDS.—An institu-  
24 tion of higher education that receives an  
25 award under clause (i) to support graduate

1 and postdoctoral research fellowships for  
2 students and postdoctoral researchers de-  
3 scribed in such clause shall use such award  
4 for any of the following, as the case may  
5 be:

6 “(I) For graduate fellowships,  
7 tuition, education-related fees, and  
8 stipends for up to three academic  
9 years.

10 “(II) For postdoctoral fellow-  
11 ships, salaries, benefits, relocation  
12 costs, related conference travels, and  
13 research expenses for up to three  
14 years.

15 “(III) Such other expenses as the  
16 Director of the National Science  
17 Foundation determines appropriate.

18 “(iii) ELIGIBILITY.—To be eligible to  
19 receive an award under clause (i) to sup-  
20 port graduate and postdoctoral research  
21 fellowships for students and postdoctoral  
22 researchers described in such clause, an in-  
23 stitution of higher education applying for  
24 such an award shall ensure such students

1 and postdoctoral researchers satisfy the  
2 following:

3 “(I) Are citizens, nationals, or  
4 lawful permanent residents of the  
5 United States.

6 “(II) Demonstrate a commitment  
7 to a career in research into fields and  
8 research areas that will contribute to  
9 the development and deployment of  
10 trustworthy artificial intelligence sys-  
11 tems, including in areas of security,  
12 safety, reliability, or other aspects of  
13 artificial intelligence trustworthiness  
14 as established by the National Insti-  
15 tute of Standards and Technology  
16 pursuant to section 22A of the Na-  
17 tional Institute of Standards and  
18 Technology Act (15 U.S.C. 278h-1).

19 “(III) For graduate fellowships,  
20 are—

21 “(aa) full-time students in  
22 an eligible program at the insti-  
23 tution of higher education, as de-  
24 termined by the Director of the  
25 National Science Foundation; or

1                   “(bb) students pursuing a  
2                   degree on a less than full-time  
3                   basis, but not less than half-time  
4                   basis, in an eligible program at  
5                   the institution of higher edu-  
6                   cation, as determined by the Di-  
7                   rector.

8                   “(IV) For postdoctoral fellow-  
9                   ships, have a doctoral degree in an eli-  
10                  gible program, as determined by the  
11                  Director, have received such degree  
12                  not earlier than five years before the  
13                  date that such fellowship begins, and  
14                  have a postdoctoral appointment at a  
15                  host institution.

16                  “(iv) APPLICATION.—An institution of  
17                  higher education that seeks an award  
18                  under clause (i) shall submit to the Direc-  
19                  tor of the National Science Foundation an  
20                  application at such time, in such manner,  
21                  and containing such information as the Di-  
22                  rector may require. At a minimum, the Di-  
23                  rector shall require such an application to  
24                  include a description of the following:

1                   “(I) How the proposed research  
2                   and activities are designed to con-  
3                   tribute to the development and deploy-  
4                   ment of trustworthy artificial intel-  
5                   ligence systems, including ways to de-  
6                   sign, train, evaluate, and understand  
7                   such systems.

8                   “(II) How the students and  
9                   postdoctoral researchers described in  
10                  clause (i) who are the subject of such  
11                  application will be integrated with ar-  
12                  tificial intelligence researchers at such  
13                  institution in a role consistent with  
14                  being a member of an interdiscipli-  
15                  nary or transdisciplinary team.

16                  “(III) How such institution plans  
17                  to disseminate to the broader artificial  
18                  intelligence systems research commu-  
19                  nity any research findings, learned  
20                  best practices, or technical solutions  
21                  that are the outcome of such an  
22                  award.

23                  “(vi) ADMINISTRATIVE AGREE-  
24                  MENTS.—Fellowships supported by an  
25                  award under clause (i) may include tem-

1           porary artificial intelligence-related posi-  
2           tions at Federal or State agencies, Na-  
3           tional Laboratories, private sector entities,  
4           institutions of higher education, the Insti-  
5           tute, or other artificial intelligence relevant  
6           entities, as determined appropriate by the  
7           Director of the National Science Founda-  
8           tion.”; and

9           (2) by adding at the end the following new  
10          paragraph:

11           “(4) ARTIFICIAL INTELLIGENCE SKILLS-BASED  
12          TRAINING ACROSS THE NATIONAL SCIENCE FOUNDA-  
13          TION.—The Director of the National Science Foun-  
14          dation shall seek to encourage the application of ar-  
15          tificial intelligence systems to accelerate scientific  
16          discovery and technology development across all  
17          fields of STEM supported by the Foundation, in-  
18          cluding by supporting the following:

19           “(A) Training for undergraduate and grad-  
20          uate students and postdoctoral researchers  
21          through existing technical and skills-based  
22          training or certification programs, and, as ap-  
23          propriate, by providing for additional experien-  
24          tial learning experiences.

1           “(B) Development and hosting of intra or  
2 inter-institutional workshops on the application  
3 of trustworthy artificial intelligence systems to  
4 new uses in research, development, demonstra-  
5 tion, testing, dissemination, and evaluation.

6           “(C) Administrative and award supple-  
7 ments to existing research awards to support  
8 professional development experiences for grad-  
9 uate students and postdoctoral researchers who  
10 receive a substantial portion of the support of  
11 such students and researchers in connection  
12 with such research awards to learn how to  
13 apply artificial intelligence systems to the re-  
14 search of such students and researchers, as de-  
15 termined by the Director.”.

16       (c) WORKSHOPS.—Subsection (d) of section 5401 of  
17 the National Artificial Intelligence Initiative Act of 2020  
18 (15 U.S.C. 9451) is amended by adding at the end the  
19 following new paragraph:

20           “(3) WORKSHOPS.—The Director of the Na-  
21 tional Science Foundation may make awards for the  
22 development and hosting of intra- or inter-institu-  
23 tional workshops to facilitate the growth of multi-  
24 disciplinary teams that can advance the development

1 and training of trustworthy artificial intelligence sys-  
2 tems.”.

3 (d) PEER REVIEW PANELS.—Section 5401 of the  
4 National Artificial Intelligence Initiative Act of 2020 (15  
5 U.S.C. 9451) is amended—

6 (1) by redesignating subsection (g) as sub-  
7 section (h); and

8 (2) by inserting after subsection (f) the fol-  
9 lowing new subsection:

10 “(g) PEER REVIEW PANELS.—As practicable and ap-  
11 propriate, the Director of the National Science Founda-  
12 tion shall ensure any merit review panel convened to evalu-  
13 ate a proposal related to artificial intelligence systems re-  
14 search and related activities integrates perspectives from  
15 multiple and diverse research disciplines, including re-  
16 searchers from social science, technology ethics, normative  
17 ethics, legal, and linguistic disciplines.”.

18 **SEC. 3. NIST ACTIVITIES TO DESCRIBE AND SUPPORT THE**  
19 **ARTIFICIAL INTELLIGENCE WORKFORCE.**

20 (a) AUTHORITIES TO SUPPORT WORKFORCE FRAME-  
21 WORKS.—Subsection (b) of section 2 of the National Insti-  
22 tute of Standards and Technology Act (15 U.S.C. 272)  
23 is amended—

24 (1) in paragraph (12), by striking “and” after  
25 the semicolon;

1           (2) in paragraph (13), by striking the period at  
2           the end and inserting “; and”; and

3           (3) by adding at the end the following new  
4           paragraph:

5           “(14) to provide industry, government, and re-  
6           search, nonprofit, and educational institutions with  
7           workforce frameworks for critical and emerging  
8           technologies and other science, technology, engineer-  
9           ing, and mathematics domains for the purpose of  
10          bolstering scientific and technical education, train-  
11          ing, and workforce development.”.

12          (b) NIST ACTIVITIES TO SUPPORT THE ARTIFICIAL  
13          INTELLIGENCE GOVERNANCE WORKFORCE.—Section 22A  
14          of the National Institute of Standards and Technology Act  
15          (15 U.S.C. 278h–1) is amended—

16                 (1) in subsection (b)—

17                         (A) by redesignating paragraphs (3)  
18                         through (5) as paragraphs (4) through (6), re-  
19                         spectively; and

20                         (B) by inserting after paragraph (2) the  
21                         following new paragraph:

22                         “(3) support education and workforce develop-  
23                         ment activities to expand the artificial intelligence  
24                         workforce, including careers related to helping orga-  
25                         nizations govern, map, measure, and manage artifi-

1 cial intelligence related risk, including testing, eval-  
2 uation, verification, and validation of artificial intel-  
3 ligence;” and

4 (2) by adding at the end the following new sub-  
5 section:

6 “(i) DEFINITION.—In this section, the term ‘artificial  
7 intelligence’ has the meaning given such term in section  
8 5002 of the National Artificial Intelligence Initiative Act  
9 of 2020 (15 U.S.C. 9401).”.

10 (c) ARTIFICIAL INTELLIGENCE WORKFORCE FRAME-  
11 WORK.—

12 (1) IN GENERAL.—Title LIII of the National  
13 Artificial Intelligence Initiative Act of 2020 (15  
14 U.S.C. 9441 et seq.) is amended by adding at the  
15 end the following new section:

16 **“SEC. 5304. NIST ACTIVITIES TO CATEGORIZE THE ARTIFI-  
17 CIAL INTELLIGENCE WORKFORCE.**

18 “(a) IN GENERAL.—The Director of the National In-  
19 stitute of Standards and Technology, in consultation with  
20 the Secretary of Labor, the Director of the National  
21 Science Foundation, the Director of the Office of Per-  
22 sonnel Management, and the heads of other Federal de-  
23 partments and agencies, as appropriate, shall develop fun-  
24 damental reference resources for describing and sharing

1 information regarding work related to artificial intel-  
2 ligence to address workforce gaps.

3 “(b) ACTIVITIES.—

4 “(1) IN GENERAL.—In carrying out subsection  
5 (a), the Director of the National Institute of Stand-  
6 ards and Technology shall carry out the following:

7 “(A) Develop and periodically update an  
8 artificial intelligence workforce framework,  
9 which shall include the following components:

10 “(i) A common, consistent lexicon to  
11 describe artificial intelligence employment-  
12 related activities by work role, competency  
13 area, or other categorization, as appro-  
14 priate.

15 “(ii) A description of the tasks,  
16 knowledge, or skills that are needed to per-  
17 form artificial intelligence work.

18 “(B) Support interoperability and avoid  
19 unnecessary duplication of the such components  
20 of such framework with components in other  
21 workforce frameworks, including the National  
22 Initiative for Cybersecurity Education Cyberse-  
23 curity Workforce Framework or successor  
24 framework.

1           “(C) Develop guidelines regarding how to  
2           use the artificial intelligence workforce frame-  
3           work under subparagraph (A) for different as-  
4           pects of workforce development, education, and  
5           training purposes.

6           “(D) Support external use of such frame-  
7           work, including relating to the following:

8                   “(i) The development of technical  
9                   guidelines and best practices related to the  
10                  artificial intelligence workforce, or dissemi-  
11                  nation of existing related guidelines, as ap-  
12                  propriate.

13                   “(ii) Outreach and dissemination to  
14                   artificial intelligence programs at all edu-  
15                   cation levels of such framework to prepare  
16                   and improve a skilled artificial intelligence  
17                   workforce for the public and private sec-  
18                   tors.

19           “(2) STAKEHOLDER INPUT.—In carrying out  
20           this subsection, the Director of the National Insti-  
21           tute of Standards and Technology shall seek input  
22           from the following:

23                   “(A) Federal departments and agencies.

24                   “(B) State, local, Tribal, and territorial  
25                   governments.

1 “(C) Industry.

2 “(D) Institutions of higher education.

3 “(E) National Laboratories.

4 “(F) Non-profit organizations, including  
5 organization that represent workers in relevant  
6 industries.

7 “(c) SUPPORTING EFFORTS TO IDENTIFY AND AD-  
8 DRESS FEDERAL ARTIFICIAL INTELLIGENCE WORKFORCE  
9 GAPS.—The Director of the National Institute of Stand-  
10 ards and Technology shall use the artificial intelligence  
11 workforce framework under subsection (b)(1)(A) to pro-  
12 vide technical assistance to the following:

13 “(1) The Director of the National Science  
14 Foundation, in developing criteria to designate quali-  
15 fied institutions of higher education for the Federal  
16 AI Scholarship-for-Service Program under section  
17 10313(d) of the Research and Development, Com-  
18 petition, and Innovation Act (42 U.S.C. 18993(d)).

19 “(2) The Director of the Office of Personnel  
20 Management, to align the appropriate roles, knowl-  
21 edge, skills, abilities, and tasks specified in such  
22 framework with the activities described in section  
23 105 of the AI in Government Act (title I of division  
24 U of the Consolidated Appropriations Act, 2021  
25 (Public Law 116–260)).

1       “(d) PUBLICATION.—Not later than one year after  
2 the development of the artificial intelligence workforce  
3 framework under subsection (b)(1)(A), the Director of the  
4 National Institute of Standards and Technology shall sub-  
5 mit to the Committee on Science, Space, and Technology  
6 of the House of Representatives and the Committee on  
7 Commerce, Science, and Transportation of the Senate  
8 such framework and make such framework publicly avail-  
9 able on the website of the National Institute of Standards  
10 and Technology.

11       “(e) DEFINITIONS.—In this section:

12               “(1) ARTIFICIAL INTELLIGENCE SYSTEM.—The  
13 term ‘artificial intelligence system’ means any data  
14 system, software, hardware, application, tool, service,  
15 or utility that operates in whole or in part using ar-  
16 tificial intelligence.

17               “(2) NON-PROFIT ORGANIZATION.—The term  
18 ‘non-profit organization’ means an organization de-  
19 scribed in section 501(c)(3) of the Internal Revenue  
20 Code of 1986 and exempt from tax under section  
21 501(a) of such Code.

22               “(3) TECHNICAL STANDARD.—The term ‘tech-  
23 nical standard’ has the meaning given such term in  
24 section 12(d)(5) of the National Technology Trans-

1       fer and Advancement Act of 1995 (15 U.S.C. 272  
2       note).

3           “(4) WORKFORCE FRAMEWORK.—The term  
4       ‘workforce framework’ means a common taxonomy  
5       and lexicon for any given domain that includes the  
6       building blocks of tasks, knowledge, or skills that  
7       can be structured to form work roles or competency  
8       areas.”.

9           (2) CLERICAL AMENDMENTS.—The tables of  
10       contents in section 2(b) and title LIII of division E  
11       of the William M. (Mac) Thornberry National De-  
12       fense Authorization Act for Fiscal Year 2021 are  
13       amended by inserting after the item relating to sec-  
14       tion 5303 the following new item: “Sec. 5304. NIST  
15       activities to categorize the artificial intelligence  
16       workforce.”.

