

116TH CONGRESS
1ST SESSION

H. R. 2202

To establish a coordinated Federal initiative to accelerate artificial intelligence research and development for the economic and national security of the United States, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

APRIL 10, 2019

Mr. LIPINSKI (for himself and Mr. REED) introduced the following bill; which was referred to the Committee on Science, Space, and Technology

A BILL

To establish a coordinated Federal initiative to accelerate artificial intelligence research and development for the economic and national security of the United States, 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; TABLE OF CONTENTS.**

4 (a) SHORT TITLE.—This Act may be cited as the
5 “Growing Artificial Intelligence Through Research Act”
6 or the “GrAITR Act”.

7 (b) TABLE OF CONTENTS.—The table of contents for
8 this Act is as follows:

- Sec. 1. Short title; table of contents.
 Sec. 2. Sense of Congress.
 Sec. 3. Definitions.

TITLE I—NATIONAL ARTIFICIAL INTELLIGENCE INITIATIVE

- Sec. 101. National Artificial Intelligence Initiative.
 Sec. 102. National Artificial Intelligence Coordination Office.
 Sec. 103. Interagency Committee.
 Sec. 104. Advisory Committee.

TITLE II—NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY ARTIFICIAL INTELLIGENCE ACTIVITIES

- Sec. 201. In general.

TITLE III—NATIONAL SCIENCE FOUNDATION AND MULTIDISCIPLINARY CENTERS FOR ARTIFICIAL INTELLIGENCE RESEARCH AND EDUCATION

- Sec. 301. Artificial intelligence research and education program.
 Sec. 302. Multidisciplinary centers for artificial intelligence research and education.

TITLE IV—DEPARTMENT OF ENERGY ARTIFICIAL INTELLIGENCE RESEARCH PROGRAM

- Sec. 401. In general.

1 **SEC. 2. SENSE OF CONGRESS.**

2 It is the sense of Congress that—

3 (1) there is a need for a National Artificial In-
 4 telligence Initiative, including a comprehensive artifi-
 5 cial intelligence research and development strategy
 6 and coordination across agencies;

7 (2) there are currently several committees
 8 working on related tasks with respect to artificial in-
 9 telligence and many agency representatives serve on
 10 multiple such committees with similar goals with re-
 11 spect to artificial intelligence; and

1 (3) the reporting structure of such committees
2 could be simplified to address efficiently the goals of
3 the Initiative.

4 **SEC. 3. DEFINITIONS.**

5 In this Act:

6 (1) **ARTIFICIAL INTELLIGENCE.**—The term “ar-
7 tificial intelligence”—

8 (A) means intelligent machines that use al-
9 gorithms, computer programs, and other tech-
10 niques to behave in ways commonly thought to
11 require intelligence; and

12 (B) includes forms such as machine learn-
13 ing, computer vision, and natural language
14 processing.

15 (2) **ADVISORY COMMITTEE.**—The term “Advi-
16 sory Committee” means the committee established
17 or designated under section 104.

18 (3) **EMERGING RESEARCH INSTITUTION.**—The
19 term “emerging research institution” means an in-
20 stitution of higher education that—

21 (A) receives less than \$20,000,000 in Fed-
22 eral research funding annually; and

23 (B) may grant a doctoral degree.

1 (4) INDUSTRY.—The term “industry” means
2 entities in industries relevant to artificial intel-
3 ligence.

4 (5) INITIATIVE.—The term “Initiative” means
5 the National Artificial Intelligence Initiative estab-
6 lished under section 101.

7 (6) INSTITUTIONS OF HIGHER EDUCATION.—
8 The term “institutions of higher education” has the
9 meaning given the term in section 101 of the Higher
10 Education Act of 1965 (20 U.S.C. 1001).

11 (7) INTERAGENCY COMMITTEE.—The term
12 “Interagency Committee” means the committee es-
13 tablished or designated under section 104(a).

14 (8) K–12 EDUCATION.—The term “K–12 edu-
15 cation” means elementary school and secondary edu-
16 cation, as such terms are defined in section 8101 of
17 the Elementary and Secondary Education Act of
18 1965 (20 U.S.C. 7801).

19 (9) MACHINE LEARNING.—The term “machine
20 learning” means a subfield of artificial intelligence
21 that is characterized by giving computers the auton-
22 omous ability to progressively optimize performance
23 of a specific task based on data without being explic-
24 itly programmed.

1 **TITLE I—NATIONAL ARTIFICIAL**
2 **INTELLIGENCE INITIATIVE**

3 **SEC. 101. NATIONAL ARTIFICIAL INTELLIGENCE INITIA-**
4 **TIVE.**

5 The President shall establish and implement an ini-
6 tiative with respect to artificial intelligence, to be known
7 as the “National Artificial Intelligence Initiative”. In car-
8 rying out the Initiative, the President shall, acting through
9 appropriate Federal entities, including the Networking
10 and Information Technology Research and Development
11 Program—

12 (1) establish the objectives, priorities, and
13 metrics for the strategic plans under section 103 to
14 accelerate development of artificial intelligence
15 science and technology applications in the United
16 States;

17 (2) invest in artificial intelligence science and
18 technology research, development, demonstration,
19 application to analysis and modeling, and other ac-
20 tivities;

21 (3) support the development of an artificial in-
22 telligence science and technology workforce pipeline
23 by making strategic investments to—

24 (A) expand the number of researchers,
25 educators, and students with training in artifi-

1 cial intelligence science and technology to de-
2 velop a workforce pipeline;

3 (B) increase the number of skilled and
4 trained workers from underrepresented groups
5 who can contribute to the development of artifi-
6 cial intelligence technologies, diversify the work-
7 force, and expand the workforce pipeline;

8 (C) promote the development and inclusion
9 of multidisciplinary curricula and research op-
10 portunities for artificial intelligence science and
11 engineering, including advanced technological
12 education, during the primary, secondary, un-
13 dergraduate, graduate, postdoctoral, adult
14 learning, and career retraining stages of edu-
15 cation; and

16 (D) equip workers with the knowledge and
17 skill sets required to operate effectively in occu-
18 pations and workplaces that will be increasingly
19 influenced by artificial intelligence;

20 (4) facilitate coordination of efforts and collabo-
21 ration with respect to artificial intelligence among
22 Government, Federal and national laboratories, non-
23 profit organizations, institutions of higher education,
24 and industry;

1 (5) leverage existing Federal investments, and
2 partner with industry and institutions of higher edu-
3 cation to leverage knowledge and resources, to ad-
4 vance objectives and priorities of the Initiative;

5 (6) strengthen research, development, dem-
6 onstration, and application in the fields of artificial
7 intelligence science and technology by—

8 (A) addressing basic research knowledge
9 gaps with respect to artificial intelligence
10 through research;

11 (B) promoting the further development of
12 facilities and centers available for artificial in-
13 telligence science and technology research, test-
14 ing, and education;

15 (C) stimulating research on, and pro-
16 moting more rapid development and commer-
17 cialization of, artificial intelligence-based tech-
18 nologies;

19 (D) promoting research into the effects of
20 artificial intelligence and applications of artifi-
21 cial intelligence on society, the workforce and
22 workplace, and individuals, including those from
23 underrepresented groups;

24 (E) promoting data sharing among the
25 Federal Government, academic researchers, the

1 private sector, and other practitioners of artificial intelligence;
2

3 (F) identifying and minimizing inappropriate bias in data sets, algorithms, and other
4 aspects of artificial intelligence; and
5

6 (G) supporting efforts to create metrics to
7 assess safety, security, and reliability of applications of artificial intelligence science and technology;
8 and
9

10 (7) ensure that artificial intelligence research,
11 development, demonstration, and application efforts
12 create measurable benefits for all individuals in the
13 United States, including members of disadvantaged
14 and underrepresented groups.

15 **SEC. 102. NATIONAL ARTIFICIAL INTELLIGENCE COORDI-**
16 **NATION OFFICE.**

17 (a) IN GENERAL.—The Director of the Office of
18 Science and Technology Policy, in consultation with the
19 Director of the National Science Foundation, the Secretary of Energy, and the Secretary of Commerce shall
20 establish or designate, and appoint a director of, an office
21 to be known as the “National Artificial Intelligence Co-
22 ordination Office”.

23
24 (b) DUTIES.—The National Artificial Intelligence Co-
25 ordination Office shall—

1 (1) provide technical and administrative support
2 to the Advisory Committee;

3 (2) serve as the point of contact on Federal ar-
4 tificial intelligence activities for government organi-
5 zations, academia, industry, professional societies,
6 State artificial intelligence programs, interested cit-
7 izen groups, and others to exchange technical and
8 programmatic information;

9 (3) conduct public outreach, including dissemi-
10 nation of findings and recommendations of the Advi-
11 sory Committee, as appropriate; and

12 (4) promote access to and early application of
13 the technologies, innovations, and expertise derived
14 from Initiative activities to agency missions and sys-
15 tems across the Federal Government, and to United
16 States industry, including startup companies.

17 (c) FUNDING.—The National Artificial Intelligence
18 Coordination Office shall be funded through interagency
19 funding.

20 (d) REPORT.—Within 90 days after the date of en-
21 actment of this Act, the Director of the Office of Science
22 and Technology Policy shall report to the Senate Com-
23 mittee on Commerce, Science, and Transportation, and
24 the House of Representatives Committee on Science,

1 Space, and Technology on the funding of the Artificial In-
2 telligence Coordination Office. The report shall include—

3 (1) the amount of funding required to ade-
4 quately fund the Office;

5 (2) the adequacy of existing mechanisms to
6 fund this Office; and

7 (3) the actions taken by the Director to ensure
8 stable funding of this Office.

9 **SEC. 103. INTERAGENCY COMMITTEE.**

10 (a) IN GENERAL.—The Director of the Office of
11 Science and Technology Policy shall establish or designate
12 an Interagency Committee on Artificial Intelligence.

13 (b) DUTIES.—The Interagency Committee, in con-
14 sultation with the Advisory Committee, shall—

15 (1) coordinate the artificial intelligence and
16 technology research and education activities and pro-
17 grams of the Federal agencies;

18 (2) establish objectives and priorities of the Ini-
19 tiative, consistent with the goals in section 3, based
20 on identified knowledge and workforce gaps and
21 other national needs;

22 (3) assess and recommend Federal infrastruc-
23 ture needs to support the Initiative; and

1 (4) evaluate opportunities for international co-
2 operation with strategic allies on research and devel-
3 opment in artificial intelligence and technology.

4 (c) CHAIRS.—The Interagency Committee shall be
5 jointly chaired by the Director of the National Institute
6 of Standards and Technology, the Director of the National
7 Science Foundation, and the Secretary of Energy.

8 (d) STRATEGIC PLAN.—Not later than 1 year after
9 the date of enactment of this Act, the Advisory Committee
10 shall develop a 5-year strategic plan, and 6 years after
11 enactment of the Act develop an additional 5-year stra-
12 tegic plan, with periodic updates as appropriate to guide
13 the activities of the Initiative, meet Initiative goals and
14 priorities, and anticipate outcomes at the participating
15 agencies. In carrying out this subsection, the Interagency
16 Committee should take in to consideration the reports
17 from the Advisory Committee, as described below.

18 (e) COMPOSITION.—The Interagency Committee shall
19 be comprised of representatives from—

20 (1) the National Institute of Standards and
21 Technology;

22 (2) the National Science Foundation;

23 (3) the Department of Energy;

24 (4) the National Aeronautics and Space Admin-
25 istration;

- 1 (5) the Department of Defense;
- 2 (6) the Office of the Director of National Intel-
- 3 ligence;
- 4 (7) the Office of Management and Budget;
- 5 (8) the Office of Science and Technology Policy;
- 6 (9) the National Institutes of Health; and
- 7 (10) any other Federal agency as considered
- 8 appropriate by the Director of the Office of Science
- 9 and Technology Policy.

10 **SEC. 104. ADVISORY COMMITTEE.**

11 (a) IN GENERAL.—The Director of the Office of

12 Science and Technology Policy (in this section referred to

13 as the “Director”) shall establish or designate an National

14 Artificial Intelligence Advisory Committee.

15 (b) QUALIFICATIONS.—The Director shall appoint

16 members to the Advisory Committee who are qualified to

17 provide advice and information on artificial intelligence

18 and technology research, development, demonstrations,

19 education, infrastructure, technology transfer, commercial

20 applications, or concerns of a national security, social, or

21 economic nature. The set of appointees shall collectively

22 have expertise on a wide range of defense and non-defense

23 Artificial Intelligence applications.

24 (c) DUTIES.—The Advisory Committee shall advise

25 the Director of the Office of Science and Technology Pol-

1 icy on matters relating to the Initiative, including assess-
2 ing—

3 (1) trends and developments in artificial intel-
4 ligence, including the current and near future state
5 of artificial intelligence systems and forecasting;

6 (2) progress made in implementing the Initia-
7 tive;

8 (3) the need to revise the Initiative;

9 (4) the balance among the components of the
10 Initiative, including funding levels for the Initiative
11 component areas;

12 (5) whether the Initiative component areas, pri-
13 orities, and technical goals are helping to maintain
14 United States leadership in artificial intelligence and
15 technology;

16 (6) the management, coordination, implementa-
17 tion, and activities of the Initiative; and

18 (7) whether societal, ethical, legal, environ-
19 mental, and workforce concerns are adequately ad-
20 dressed by the Initiative.

21 (d) REPORTS.—Not later than 4 years after the date
22 of the most recent assessment under subsection (c), and
23 quadrennially thereafter, the Advisory Committee shall
24 submit to the Director of the Office of Science and Tech-
25 nology Policy, the Committee on Commerce, Science, and

1 Transportation of the Senate, and the Committee on
2 Science, Space, and Technology of the House of Rep-
3 resentatives a report of its assessments under subsection
4 (c) and its recommendations for ways to improve the Ini-
5 tiative.

6 (e) TRAVEL EXPENSES OF NON-FEDERAL MEM-
7 BERS.—Non-Federal members of the Advisory Committee,
8 while attending meetings of the Advisory Committee or
9 while otherwise serving at the request of the head of the
10 Advisory Committee away from their homes or regular
11 places of business, may be allowed travel expenses, includ-
12 ing per diem in lieu of subsistence, as authorized by sec-
13 tion 5703 of title 5, United States Code, for individuals
14 in the government serving without pay. Nothing in this
15 subsection shall be construed to prohibit members of the
16 Advisory Committee who are officers or employees of the
17 United States from being allowed travel expenses, includ-
18 ing per diem in lieu of subsistence, in accordance with ex-
19 isting law.

20 (f) EXEMPTION FROM SUNSET.—Section 14 of the
21 Federal Advisory Committee Act shall not apply to the
22 Advisory Committee.

1 **TITLE II—NATIONAL INSTITUTE**
2 **OF STANDARDS AND TECH-**
3 **NOLOGY ARTIFICIAL INTEL-**
4 **LIGENCE ACTIVITIES**

5 **SEC. 201. IN GENERAL.**

6 (a) NATIONAL INSTITUTE OF STANDARDS AND
7 TECHNOLOGY ACTIVITIES.—As part of the Initiative, the
8 Director of the National Institute of Standards and Tech-
9 nology (in this section, referred to as the “Director”)
10 shall—

11 (1) carry out the Initiative, as appropriate;

12 (2) support the development of measurements
13 and standards necessary to advance commercial de-
14 velopment of artificial intelligence applications, in-
15 cluding by—

16 (A) developing measurements and stand-
17 ards; and

18 (B) supporting the efforts to develop meas-
19 urements and consensus standards by stand-
20 ards development organizations;

21 (3) establish and support collaborative ventures
22 or consortia with public or private sector entities, in-
23 cluding institutions of higher education, National
24 Laboratories, and industry, for the purpose of ad-

1 vancing fundamental and applied artificial intel-
2 ligence research and development; and

3 (4) use existing authorities to award contracts
4 as necessary to carry out the Initiative, including co-
5 operative agreements and other similar transactions.

6 (b) ARTIFICIAL INTELLIGENCE OUTREACH.—

7 (1) IN GENERAL.—The Director shall conduct
8 outreach—

9 (A) to receive input from stakeholders on
10 the development of a plan to address future
11 measurements and standards related to artifi-
12 cial intelligence; and

13 (B) to provide an opportunity for public
14 comment on any such measurements or stand-
15 ards.

16 (2) MEETINGS.—

17 (A) IN GENERAL.—Not later than 1 year
18 after the date of the enactment of this Act, and
19 a periodic basis thereafter, as the Director de-
20 termines appropriate, the Director shall convene
21 one or more meetings of stakeholders, including
22 technical expert representatives from govern-
23 ment organizations, industry, and institutions
24 of higher education to discuss topics described
25 in subparagraph (B).

1 (B) TOPICS.—Meetings under subpara-
2 graph (A) may cover topics that the Director
3 determines to be important to the development
4 of standards and measurements with respect to
5 artificial intelligence, including—

- 6 (i) cybersecurity;
- 7 (ii) algorithm accountability;
- 8 (iii) algorithm explainability;
- 9 (iv) algorithm trustworthiness; and
- 10 (v) the establishment of a common
11 lexicon of artificial intelligence.

12 (C) PURPOSE.—The purpose of the meet-
13 ings under this subsection shall be—

- 14 (i) to assess the contemporary re-
15 search on the topic determined by the Di-
16 rector under subparagraph (B);
- 17 (ii) to evaluate the research gaps re-
18 lating to such topic; and
- 19 (iii) to provide an opportunity for
20 stakeholders to provide recommendations
21 on what the current research needs are
22 that the National Institute of Standards
23 and Technology and the Initiative may ad-
24 dress.

1 (3) REPORT TO CONGRESS.—Not later than 2
2 years after the date of enactment of this Act, the
3 Director shall transmit to the Committee on Science,
4 Space, and Technology of the House of Representa-
5 tives and the Committee on Commerce, Science, and
6 Transportation of the Senate a summary report con-
7 taining a description of the results of outreach and
8 meetings conducted under this section.

9 (c) APPROPRIATION.—There are authorized to be ap-
10 propriated \$90,000,000 for each of fiscal years 2020
11 through 2024 to carry out this section.

12 **TITLE III—NATIONAL SCIENCE**
13 **FOUNDATION AND MULTI-**
14 **DISCIPLINARY CENTERS FOR**
15 **ARTIFICIAL INTELLIGENCE**
16 **RESEARCH AND EDUCATION**

17 **SEC. 301. ARTIFICIAL INTELLIGENCE RESEARCH AND EDU-**
18 **CATION PROGRAM.**

19 (a) IN GENERAL.—As part of the Initiative, the Di-
20 rector of the National Science Foundation (in this section,
21 referred to as the “Director”) shall establish and imple-
22 ment a research and education program on artificial intel-
23 ligence and engineering.

1 (b) PROGRAM COMPONENTS.—In carrying out the
2 program required under subsection (a), the Director shall
3 carry out the Initiative as appropriate and shall—

4 (1) continue to support interdisciplinary re-
5 search on, and human resources development in, all
6 aspects of artificial intelligence science and engineer-
7 ing, including—

8 (A) algorithm accountability;

9 (B) minimization of inappropriate bias in
10 training data sets or algorithmic feature selec-
11 tion;

12 (C) qualitative and quantitative forecasting
13 of future capabilities and applications; and

14 (D) the societal and ethical implications of
15 artificial intelligence;

16 (2) use existing authorities and programs and
17 collaborate with other Federal agencies—

18 (A) to improve the teaching and learning
19 of artificial intelligence science and engineering
20 during the primary, secondary, undergraduate,
21 graduate, postgraduate, adult learning, and ca-
22 reer retraining stages of education;

23 (B) to increase participation in the artifi-
24 cial intelligence fields, including by individuals
25 identified in sections 33 and 34 of the Science

and Engineering Equal Opportunities Act (42 U.S.C. 1885a; 42 U.S.C. 1885b);

(C) to formulate goals for education activities related to artificial intelligence engineering and research to be supported by the National Science Foundation related to topics important to the Initiative, including—

(i) algorithm accountability;

(ii) algorithm explainability;

(iii) consumer data privacy;

(iv) the assessment and minimization of inappropriate bias in training data and output;

(v) the societal and ethical implications of the use of artificial intelligence;

(vi) algorithm trustworthiness; and

(vii) algorithmic forecasting;

(D) to engage with institutions of higher education, research communities, potential users of information produced under this section, entities in the private sector, and non-Federal entities—

(i) to leverage the collective body of knowledge from existing artificial intel-

1 intelligence and engineering research and edu-
2 cation activities; and

3 (ii) to support partnerships among in-
4 stitutions of higher education and industry
5 that facilitate collaborative research, per-
6 sonnel exchanges, and workforce develop-
7 ment;

8 (E) to coordinate research efforts funded
9 through existing programs across the direc-
10 torates of the National Science Foundation; and

11 (F) to ensure adequate access to artificial
12 intelligence and engineering research and edu-
13 cation infrastructure, including through devel-
14 opment of hardware and facilitation of the use
15 of computing resources, including cloud-based
16 computing services.

17 (c) GRADUATE TRAINEESHIPS.—In carrying out the
18 program required under subsection (a), the Director may
19 provide traineeships to graduate students at institutions
20 of higher education who—

21 (1) are United States nationals or aliens law-
22 fully admitted for permanent residence in the United
23 States; and

24 (2) who choose to pursue masters or doctoral
25 degrees in artificial intelligence.

1 **SEC. 302. MULTIDISCIPLINARY CENTERS FOR ARTIFICIAL**
2 **INTELLIGENCE RESEARCH AND EDUCATION.**

3 (a) IN GENERAL.—The Director of the National
4 Science Foundation (in this section, referred to as the
5 “Director”), in consultation with other Federal agencies
6 as appropriate, shall award grants to eligible entities to
7 establish up to 5 research and education centers (in this
8 section, referred to as “Centers”) to conduct research and
9 education activities in support of the Initiative, to be
10 known as “Multidisciplinary Centers for Artificial Intel-
11 ligence Research and Education”.

12 (b) ELIGIBLE ENTITIES.—In this section, the term
13 “eligible entity” means—

- 14 (1) an institution of higher education;
15 (2) a relevant nonprofit or private sector orga-
16 nization;
17 (3) a State or local government; and
18 (4) a consortium of entities that consists of en-
19 tities described in paragraphs (1) through (3).

20 (c) K–12 EDUCATION.—Not less than 1 grant under
21 this section must be for a Center with the primary purpose
22 of integrating artificial intelligence into K–12 education.

23 (d) APPLICATION.—An eligible entity seeking funding
24 under this section shall submit an application to the Direc-
25 tor at such time, in such manner, and containing such

1 information as the Director may require. The application
2 shall include—

3 (1) a plan for the proposed Center—

4 (A) to work with other research institu-
5 tions, emerging research institutions, and in-
6 dustry to leverage expertise in artificial intel-
7 ligence, education and curricula development,
8 and technology transfer;

9 (B) to promote active collaboration among
10 researchers in multiple disciplines and across
11 multiple institutions involved in artificial intel-
12 ligence research including physics, engineering,
13 mathematical sciences, computer and informa-
14 tion science, biological and cognitive sciences,
15 material science, education, social and behav-
16 ioral sciences, such as industrial-organizational
17 psychology;

18 (C) to integrate into the activities of the
19 Center consideration of the ethics of artificial
20 intelligence development, technology usage, and
21 data collection, storage, and sharing, including
22 training data sets;

23 (D) to support long-term and short-term
24 workforce development in the artificial intel-

1 ligence field, including broadening participation
2 of underrepresented groups; and

3 (E) to support an innovation ecosystem to
4 work with industry to translate Center research
5 into applications and products; and

6 (2) a description of the anticipated long-term
7 impact of the Center beyond the termination of sup-
8 port under this section.

9 (e) SELECTION AND DURATION.—

10 (1) IN GENERAL.—A Center established using a
11 grant under this section may receive funding under
12 this section for a period of 5 years.

13 (2) EXTENSION.—Such a Center may apply for,
14 and the Director may grant, an extension of a grant
15 under this section for an additional 5-year period.

16 (3) TERMINATION.—The Director may termi-
17 nate funding under this section for an underper-
18 forming Center for cause.

19 (f) AUTHORIZATION.—There are authorized to be ap-
20 propriated \$10,000,000 for each Center established under
21 this section for each of fiscal years 2020 through 2024.

1 **TITLE IV—DEPARTMENT OF EN-**
2 **ERGY ARTIFICIAL INTEL-**
3 **LIGENCE RESEARCH PRO-**
4 **GRAM**

5 **SEC. 401. IN GENERAL.**

6 (a) PROGRAM.—As a part of the Initiative, the Sec-
7 retary of Energy (in this section, referred to as the “Sec-
8 retary”) shall carry out a research program on artificial
9 intelligence.

10 (b) COMPONENTS.—In carrying out the program re-
11 quired under subsection (a), the Secretary shall—

12 (1) formulate objectives for artificial intelligence
13 research to be supported by the Department of En-
14 ergy that are consistent with the Initiative;

15 (2) leverage the collective body of knowledge
16 from existing artificial intelligence research;

17 (3) coordinate research efforts funded through
18 existing programs across the Office of Science;

19 (4) engage with other Federal agencies, re-
20 search communities, and potential users of informa-
21 tion produced under this section; and

22 (5) build, maintain, and, to the extent prac-
23 ticable, make available for use by academic, govern-
24 ment, and private sector researchers, the computing

1 hardware and software necessary to carry out a re-
2 search program in artificial intelligence science.

3 (c) RESEARCH CENTERS.—

4 (1) GRANTS.—In carrying out this section, the
5 Secretary may award grants to eligible entities to es-
6 tablish and operate up to 5 artificial intelligence re-
7 search centers (in this section, referred to as “Cen-
8 ters”) for the purpose described in paragraph (3).

9 (2) SELECTION.—

10 (A) IN GENERAL.—Such grants shall be
11 awarded through a competitive, merit-reviewed
12 process, and consider applications from Na-
13 tional Laboratories, institutions of higher edu-
14 cation including emerging research institutions,
15 research centers, multi-institutional collabora-
16 tions, and other appropriate entities.

17 (B) ELIGIBLE ENTITIES.—In this section,
18 the term “eligible entity” means—

- 19 (i) an institution of higher education;
20 (ii) a relevant nonprofit or private sec-
21 tor organization;
22 (iii) a State or local government;
23 (iv) a National Laboratory or a feder-
24 ally funded research and development cen-
25 ter; and

1 (v) a consortium of entities that con-
2 sists of entities described in clauses (i)
3 through (iv).

4 (3) PURPOSE.—The purpose of the Centers es-
5 tablished under this section is—

6 (A) to serve the needs of the Department
7 of Energy and academic, educational, and pri-
8 vate sector entities that the Secretary deter-
9 mines appropriate;

10 (B) to advance research and education in
11 artificial intelligence and improving the com-
12 petitiveness of the United States; and

13 (C) to provide access to computing re-
14 sources to promote scientific progress and en-
15 able users from institutions of higher education,
16 educational institutions, the National Labora-
17 tories, and industry—

18 (i) to make scientific discoveries rel-
19 evant to artificial intelligence research;

20 (ii) to conduct research to accelerate
21 scientific breakthroughs in artificial intel-
22 ligence science and technology;

23 (iii) to support research conducted
24 under this section; and

1 (iv) to increase the distribution of re-
2 search infrastructure and broaden the
3 spectrum of students exposed to the artifi-
4 cial intelligence research at institutions of
5 higher education, including emerging re-
6 search institutions.

7 (4) COORDINATION.—The Secretary shall en-
8 sure the coordination of, and avoid unnecessary du-
9 plication of, the activities of each Center with the ac-
10 tivities of—

11 (A) other research entities of the Depart-
12 ment, including the Nanoscale Science Research
13 Centers, the Energy Frontier Research Centers,
14 and the Energy Innovation Hubs; and

15 (B) industry.

16 (5) DURATION.—

17 (A) IN GENERAL.—Any center selected and
18 established under this section is authorized to
19 carry out activities for a period of 5 years.

20 (B) EXTENSION.—Such a Center may
21 apply for, and the Director may grant, an ex-
22 tension of a grant under this section for an ad-
23 ditional 5-year period.

24 (C) TERMINATION.—Consistent with the
25 existing authorities of the Department, the Sec-

1 retary may terminate an underperforming Cen-
2 ter for cause during the performance period.

3 (d) APPROPRIATIONS.—

4 (1) IN GENERAL.—There are authorized to be
5 appropriated \$225,000,000 for each of fiscal years
6 2020 through 2024 to the Office of Science of the
7 Department of Energy to carry out this section.

8 (2) LIMIT.—Not less than \$100,000,000 of
9 funds appropriated under paragraph (1) shall be
10 used to carry out subsections (a) and (b).

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