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James Hicks
Acting Director, Student and Exchange Visitor Program
U.S. Immigration and Customs Enforcement, Department of Homeland Security (DHS)
500 12th Street, SW Stop 5600
Washington, D.C. 20536-5600

June 3, 2024

Re: Attention – STEM CIP Code Nomination

Dear Director Hicks:

The undersigned are a group of six organizations who share an interest in improving the United States' retention of the science, technology, engineering, and mathematics (STEM) talent it trains at U.S. universities. STEM talent is critical for technological development and U.S. competitiveness. STEM Optional Practical Training (OPT) serves as a vital bridge for international students in STEM fields, and allows them to make important contributions to the U.S. workforce and research ecosystem.

The Biden Administration's "Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence" (EO 14110) instructs the Secretary of Homeland Security to use "discretionary authorities to support and attract foreign nationals with special skills in artificial intelligence (AI) and other critical and emerging technologies seeking to work, study, or conduct research in the United States." We believe that this should include adding to the DHS STEM list additional degree fields that are important for the AI and other critical and emerging technology workforces. In particular, our group sought to explore whether there are fields of study that are not currently eligible for STEM OPT but are a documented source of significant hiring in the AI technical workforce because they develop skills relating to innovation, research, and technology development.

To that end, we nominate the following fields for inclusion in DHS's STEM Designated Degree Program list:

- Economics, General (45.0601)
- Development Economics and International Development (45.0604)
- Geography (45.0701)
- International Economics (45.0605)
- Applied Psychology (42.2813)
- Counseling Psychology (42.2803)
- Applied Economics (45.0602)
- Clinical Psychology (42.2801)

Each of the above fields prepares students for careers involving innovation, research, and technology development. Specifically, we found that each of our nominations is (1) documented to be an important source of talent in the technical AI workforce, as defined by the Center for Security and Emerging Technology, (2) identified as a STEM field by the National Center for Science and Engineering Statistics' (NCSES) "Taxonomy of Disciplines," and (3) labeled as fields of study associated with STEM jobs by the U.S. Department of Labor (DOL). Furthermore, each of the fields is a subfield within a category of fields of study (defined by the 4-digit CIP code) which contains other subfields already identified as STEM by DHS. We describe each of these three validation methods in greater detail below:

1. **Field of study recruited into the AI technical workforce.** All of the fields above are important sources of talent into the fast-growing technical AI workforce, as defined by the Center for Security and Emerging Technology (CSET) at Georgetown University.[1] As part of its Prototype Analytics for Tracking High-demand Workforce in Innovative Skill Ecosystems project, CSET tracks the supply and growth of the major components of the AI workforce in the United States, distinguishing between AI jobs related to the product team and commercialization (which are not necessarily related to STEM and which we do *not* consider) and the *technical* AI workforce who can perform the technical work in designing and producing AI applications. The technical AI workforce has grown rapidly, at 24% since 2018. CSET defines it as comprising occupations which require the STEM knowledge, skills, and abilities that enable a worker to perform technical roles on an AI development team and provide technical inputs into AI applications. CSET determined that all of these technical AI occupations are either workers already in technical AI roles or who "are an important part of the AI talent pipeline" based on their AI-applicable technical background. Using the Lightcast Profiles dataset, CSET identified the fields of study in which technical AI workers have earned degrees. We find that fields we are nominating are an important component of the talent pipeline for technical AI jobs, each graduating thousands of students who went on to join the technical AI workforce.

2. **Field of study identified as STEM in NCSES's Taxonomy of Disciplines.** Each of the fields identified above for nomination is classified as a STEM field by the National Center for Science and Engineering Statistics (NCSES) under the National Science Foundation (NSF), defining STEM fields as those that are classified as Science & Engineering and Science & Engineering-related under the NCSES Taxonomy of Disciplines (NCSES SDR 2019: Table A-1). NSCES also identifies each of the Classification of Instructional Program (CIP) codes that it considers part of the Science & Engineering Workforce under the SED-CIP code crosswalk. This definition of STEM is already being used by the government to monitor the state of the STEM workforce and STEM education, including the *Science and Engineering Indicators*, which the National Science Board (NSB) uses to inform Congress and the President about science and engineering in the U.S. For more

[1] Sonali Subbu Rathinam, "The U.S. AI Workforce: Analyzing Current and Supply and Growth," Center for Security and Emerging Technology, January 2024. See also: Diana Gehlhaus and Santiago Mutis, "The U.S. AI Workforce: Understanding the Supply of AI Talent," Center for Security and Emerging Technology, January 2021.

discussion, see "U.S. STEM Workforce: Definition, Size, and Growth," published by the NCSES.

3. **Field of study associated with STEM jobs by DOL.** All the fields we are nominating are also identified by the Department of Labor (DOL) and the Department of Education as developing the skills and knowledge needed to fill jobs that DOL classifies as STEM jobs. This STEM jobs classification is based on O*NET, a large database of occupational characteristics maintained and regularly updated by the DOL Employment and Training Administration. These can then be associated with fields of study using the CIP-SOC Crosswalk, a collaborative project between the Bureau of Labor Statistics of DOL and the National Center for Education Statistics of the Department of Education. The CIP-SOC Crosswalk connects jobs in the marketplace with associated degree programs that provide skills and knowledge for success in that job. This lets us identify degree fields of study associated by the CIP SOC Crosswalk with jobs that are identified as STEM jobs.

Given the fact that other parts of the U.S. government identify these fields as STEM and that the AI technical workforce relies on tens of thousands of workers that have completed degrees in these fields of study, we respectfully request that DHS consider adding them to the DHS STEM list. Please let us know if we can provide any additional information or data in support of this request, or if we can answer any questions DHS has about how the fields we have identified satisfy the DHS definition of a STEM field.

Sincerely,

American Immigration Council
Center for Security and Emerging Technology
Federation of American Scientists
FWD.us
Institute for Progress
Niskanen Center