

## CSET & HAI Compute Survey

As a professional employed at a US organization with a job related to artificial intelligence (AI) or a researcher with a recent AI-related publication, CSET and HAI invite you to take part in a research study. Our goal is to better understand the needs of AI professionals to achieve research progress. The research findings will inform CSET publications and policy recommendations on research funding and support offerings. Your participation is completely voluntary and involves an online survey that can be completed in 10-15 minutes. You may choose not to participate by clicking NO below. If you decide not to participate or cease participation, you will not be penalized. There are no known risks or direct benefits from participating in this research. Any publications using the survey responses will maximize confidentiality and report only anonymous, aggregated responses. If you have any questions related to the survey, please contact Rebecca Gelles at [rebecca.gelles@georgetown.edu](mailto:rebecca.gelles@georgetown.edu) or Georgetown University's Institutional Review Board (IRB) at IRB at [irboard@georgetown.edu](mailto:irboard@georgetown.edu) or (202) 687-1506. Your consent indicates that you are at least 18 years of age, have read the above information, and voluntarily agree to participate.

☐ Yes

☐ No

Roughly what amount of your time at work involves working on AI systems? By AI system, we mean a machine-based system that can (for a given set of human-defined objectives) make predictions, recommendations, or decisions influencing real or virtual environments. By work on AI systems, we mean build, develop, study, or maintain AI systems.

☐ None of my time

☐ Some of my time

☐ A moderate amount of my time

☐ Almost all of my time

☐ All of my time

End of Block: Screener

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Start of Block: AI research time

How long have you been working on AI systems?

☐ Less than one year

☐ 1 - 5 years

☐ 6 - 10 years

☐ More than 10 years

Roughly, what percentage of your time working on AI systems is spent managing compute resources? By managing compute resources, we mean work performed to

maintain a computing infrastructure, as opposed to utilizing that infrastructure to work on AI systems.

- ☐ 0 - 25%
- ☐ 26 - 50%
- ☐ 51 - 75%
- ☐ 76 - 100%

In the past year, where were the compute resources for your work on AI systems located? Select all that apply.

- ☐ Cloud
- ☐ On-premise
- ☐ ☒ I don't know

In the past year, how did you pay for the compute resources you used in your work on AI systems? Select all that apply.

- ☐ ☒ I used free compute resources
- ☐ I paid using personal funds
- ☐ I paid using outside funding, not from my employer
- ☐ My employer paid
- ☐ ☒ I don't know

*Display This Question:*

*If In the past year, how did you pay for the compute resources you used in your work on AI systems?... = I paid using personal funds*

In the past year, roughly how much money did you spend in personal funds on compute resources for your work on AI systems?

- ☐ Less than \$100
- ☐ \$101–500
- ☐ \$501–1,000
- ☐ \$1,001–5,000
- ☐ More than \$5,000

For a typical AI project that you might work on, how many processors (CPUs, GPUs, TPUs) would you distribute your data or models across?

- ☐ 1 processor
- ☐ 2-8 processors
- ☐ 9-100 processors
- ☐ More than 100 processors

For the next set of questions, think of your most significant research project of the last 5 years. By 'significant' we mean a project that contributed the most to progress in your AI-related field. If you did not participate in a research project within the last 5 years that meets this criteria, select N/A below. Otherwise continue onto the next page.

☐ N/A

*Skip To: End of Block If For the next set of questions, think of your most significant research project of the last 5 year... = N/A*

About how many people worked directly on this project?

- ☐ 1
- ☐ 2 - 5
- ☐ 6 - 15
- ☐ 16 - 50
- ☐ More than 50

In what year was the project completed?

- ☐ 2017
- ☐ 2018
- ☐ 2019
- ☐ 2020
- ☐ 2021
- ☐ 2022 \_\_\_\_\_
- ☐ Project is ongoing
- ☐ I don't know

Which part of this project required the most compute?

- ☐ Design
- ☐ Data collection or processing
- ☐ Training
- ☐ Testing and evaluation
- ☐ Deployment
- ☐ Maintenance

About how much did compute cost in this project, to date?

- ☐ \$0
- ☐ \$1 - \$1,000
- ☐ \$1,001 - \$10,000
- ☐ \$10,001 - \$100,000
- ☐ \$100,001 - \$1,000,000
- ☐ More than \$1,000,000
- ☐ I don't know

About how many GPU-hours were required for this project, to date?

- ☐ None
- ☐ Fewer than 50
- ☐ 51–500
- ☐ 501–5,000
- ☐ 5,001–50,000
- ☐ 50,001–500,000
- ☐ More than 500,000
- ☐ I don't know

How important were the following factors to the project?

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Unique data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Size of team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Specialized knowledge, talent, or skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Large amounts of compute	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Significant Project

Start of Block: Project Check

Next, think of the research project that you participated in over the past five years which required the most compute resources, compared to other projects you participated in during that time.

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Display This Question:

*If For the next set of questions, think of your most significant research project of the last 5 year... != N/A*

Is this the same project you described in the previous questions?

- ☐ Yes
- ☐ No

End of Block: Project Check

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Start of Block: Compute Project

About how many people worked directly on this project?

- ☐ 1
- ☐ 2 - 5
- ☐ 6 - 15
- ☐ 16 - 50
- ☐ More than 50

In what year was the project completed?

- ☐ 2017
- ☐ 2018
- ☐ 2019
- ☐ 2020
- ☐ 2021
- ☐ 2022 \_\_\_\_\_
- ☐ Project is ongoing
- ☐ I don't know

Which part of this project required the most compute?

- ☐ Design
- ☐ Data collection or processing
- ☐ Training
- ☐ Testing and evaluation
- ☐ Deployment
- ☐ Maintenance

About how much did compute cost in this project, to date?

- ☐ \$0
- ☐ \$1 - \$1,000
- ☐ \$1,001 - \$10,000
- ☐ \$10,001 - \$100,000
- ☐ \$100,001 - \$1,000,000
- ☐ More than \$1,000,000
- ☐ I don't know

About how many GPU-hours were required for this project, to date?

- ☐ None
- ☐ Fewer than 50
- ☐ 51–500
- ☐ 501–5,000
- ☐ 5,001–50,000
- ☐ 50,001–500,000
- ☐ More than 500,000
- ☐ I don't know



## End of Block: Compute Project

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### Start of Block: General

Now we'd like to ask you to think not about specific projects, but about your work as a whole and the AI field in general.

If the budget for your current or most recent AI project doubled, what would your first priority be?

- ☐ Collecting more data
- ☐ Refining or cleaning data
- ☐ Purchasing more or higher-quality compute
- ☐ Hiring more programmers or engineers
- ☐ Hiring researchers
- ☐ Doing more evaluation or testing

How much compute do you need for AI projects today, relative to 2 years ago?

- ☐ Much less
- ☐ Somewhat less
- ☐ About the same
- ☐ Somewhat more
- ☐ Much more

How much compute do you have access to for AI projects today, relative to 2 years ago?

- ☐ Much less
- ☐ Somewhat less
- ☐ About the same
- ☐ Somewhat more
- ☐ Much more

Now we'd like to ask some questions about compute, data, and researcher availability.  
In the last two years, how often have you done the following:

	Never	Rarely	Sometimes	Often	All the time
Rejected a project because of insufficient compute.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Revised an ongoing project because of insufficient compute.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Abandoned an ongoing project because of insufficient compute.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In the last two years, how often have you done the following:

	Never	Rarely	Sometimes	Often	All the time
Rejected a project due to insufficient data.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Revised an ongoing project plan due to insufficient data.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Abandoned an ongoing project due to insufficient data.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In the last two years, how often have you done the following:

	Never	Rarely	Sometimes	Often	All the time
Rejected a project due to insufficient researcher availability.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Revised an ongoing project plan due to insufficient researcher availability.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Abandoned an ongoing project due to insufficient researcher availability.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate your level of agreement with the following statements. Progress in AI over the past decade was the result of..

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
More or better data.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More compute.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Better algorithms.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More researchers in the field.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Greater support for AI projects.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Progress in AI over the next decade will be the result of...

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
More or better data.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More compute.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Better algorithms.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More researchers in the field.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Greater support for AI projects.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How concerned are you, if at all, that a lack of compute resources will be an obstacle to your contributions to AI in the next decade?

- ☐ Not at all concerned
- ☐ Slightly concerned
- ☐ Somewhat concerned
- ☐ Moderately concerned
- ☐ Extremely concerned

End of Block: Future AI

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Start of Block: Gov Resources

The U.S. government is exploring creating a national AI research resource, which could provide various types of support to AI researchers. Which government-provided resources would you find useful? Please select all that apply.

- ☐ Data resources
- ☐ Compute resources
- ☐ Technical staff (e.g. research programmers, administrative support)
- ☐ Grant funding
- ☐ Guidelines, standards, and frameworks

If you have any other thoughts or suggestions about the U.S. government creating national AI research resources, please detail them below.

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End of Block: Gov Resources

Start of Block: Demographics

In what sector is your primary professional affiliation?

- ☐ Academia
- ☐ Industry
- ☐ Government
- ☐ None of the Above

*Display This Question:*

*If In what sector is your primary professional affiliation? = Academia*

Have you ever considered leaving academia for an AI-related job in industry?

- ☐ Yes
- ☐ No

*Display This Question:*

*If Have you ever considered leaving academia for an AI-related job in industry? = Yes*

How important were the following factors in motivating your consideration to leave academia?

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Salary and/or benefits.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of sufficient data resources in academia.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of sufficient compute resources in academia.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to work on interesting projects.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to contribute more meaningfully to AI research.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Display This Question:*

*If In what sector is your primary professional affiliation? != Academia*

Roughly how large is your institution?

- ☐ Less than 50 employees
- ☐ 50 - 100 employees
- ☐ 101 - 500 employees
- ☐ More than 500 employees

What is your highest level of education?

- ☐ Less than high school
- ☐ High school graduate
- ☐ Some college
- ☐ Associate's degree
- ☐ Bachelor's degree
- ☐ Master's or other professional degree
- ☐ Doctorate

Which subfield(s) of AI is most of your current work in? Please select all that apply.

- ☐ Computer Vision
- ☐ Robotics
- ☐ Natural Language Processing
- ☐ Reinforcement Learning
- ☐ Other



Display This Question:

*If Which subfield(s) of AI is most of your current work in? Please select all that apply. = Computer Vision*

What topics do you work on in Computer Vision?

- ☐ Image recognition
  - ☐ Saliency detection
  - ☐ Image segmentation
  - ☐ Object tracking and/or re-identification
  - ☐ Facial recognition
  - ☐ Autonomous vehicles
  - ☐ Image or video generation
  - ☐ Captioning and summarization
  - ☐ Reconstruction
  - ☐ Other
-

Display This Question:

*If Which subfield(s) of AI is most of your current work in? Please select all that apply. = Robotics*

What topics do you work on in Robotics?

- ☐ Localization
  - ☐ Mapping
  - ☐ Manipulation
  - ☐ Simultaneous localization and mapping (SLAM)
  - ☐ Navigation
  - ☐ Autonomous driving
  - ☐ Robot perception
  - ☐ Continuous control
  - ☐ Other
-

Display This Question:

*If Which subfield(s) of AI is most of your current work in? Please select all that apply. = Natural Language Processing*

What topics do you work on in Natural Language Processing?

- ☐ Common sense inference
- ☐ Computer vision and NLP
- ☐ Cross-lingual tasks
- ☐ Dialogue
- ☐ Information extraction
- ☐ Language and knowledge bases
- ☐ Language modeling
- ☐ Machine translation
- ☐ Named entity recognition
- ☐ Optical character recognition (OCR)
- ☐ Other
- ☐ Part-of-speech tagging
- ☐ Question answering
- ☐ Sentiment analysis
- ☐ Summarization
- ☐ Text classification

☐

Text generation

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*Display This Question:*

*If Which subfield(s) of AI is most of your current work in? Please select all that apply. = Reinforcement Learning*

What subtopics do you work on in Reinforcement Learning?

☐

Continuous control

☐

Program learning

☐

Environments with language

☐

Procedurally generated environments

☐

Game-playing

☐

3D worlds

☐

Simulation Design

☐

Other

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Display This Question:

*If Which subfield(s) of AI is most of your current work in? Please select all that apply. = Other*

Do you work on any of the following other AI topics? Select all that apply.

- ☐ Recommender systems
- ☐ Speech
- ☐ Time series data
- ☐ Music and audio
- ☐ Graph analysis
- ☐ Algorithmic or architecture analysis
- ☐ ☒ None of these