



Careers in AI

Gr. 8-12 Activity Write Up

Careers in AI

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Terms of Use

Prior to using this activity or parts thereof, you agree and understand that:

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About Actua

Actua is creating a Canada where every child has the skills and confidence they need to achieve their full potential. As a leading science, technology, engineering and mathematics (STEM) outreach organization, Actua includes over 40 universities and colleges, engaging 500,000 youth in 600 communities each year. For 25 years, Actua has focused on identifying and removing the barriers for entry into STEM and now have national programs dedicated to engaging Indigenous youth, girls and young women, Black youth, those facing economic barriers and youth in Northern and remote communities. For more information, please visit us online at www.actua.ca and on social media: Instagram, LinkedIn, Facebook and YouTube! For more information, please visit us online at www.actua.ca and on social media: [Twitter](#), [Facebook](#), [Instagram](#) and [YouTube](#)!



Careers in AI

Activity Summary

In this activity, participants will learn about the AI sector and the diversity of future career pathways available to AI professionals. Participants will explore the skills and knowledge sets needed to pursue a career in this increasingly innovative and important field. Participants will also identify the importance of AI across various fields and reflect on how these jobs may be impacted by AI.

Developed by Actua, 2025.

Delivery Environment	Activity Duration	Intended Audience	Tech
In Person	75 minutes	Grades 8-12 (Ages 13-18)	Certain activities will require a laptop/tablet. With modifications, it is possible to run this entire lesson in pairs/groups. Facilitators should have access to a laptop, projector, speakers, and a screen or blank wall to project onto. <ul style="list-style-type: none">• Projector• Speaker• Screen/Blank Wall• Laptops/Tablets

Achievement Goals

Learning Goals

Following this activity, participants will:

- **Understand** the modern technological needs of society.
- **Identify** the interpersonal and technical skills needed for a career in AI.
- **Identify** future career paths in the AI sector.



Success Criteria

Following this activity, participants can express:

- **I can describe** the way people use technology in their day to day lives.
- **I can describe** some of the skills needed for a career in AI.
- **I can identify** potential future career paths in AI.

Logistics (Timing, Group Sizing, Materials)

Section Title	Est. Time	Group Size	Materials
Opening Hook	10 minutes	<i>Whole Group</i>	Facilitators <ul style="list-style-type: none"> • Careers in AI - Activity Slide Deck (<i>Appendix C</i>) • Writing Surface (e.g. Whiteboard) • Writing Utensil (e.g. Marker)
Section 1: Careers of the Future	35 minutes	<i>Whole Group; Small Groups or Pairs</i>	Facilitators <ul style="list-style-type: none"> • Careers in AI - Activity Slide Deck (<i>Appendix C</i>) • Webpage - Study in Artificial Intelligence in Canada (<i>Appendix C</i>) Per Participant <ul style="list-style-type: none"> • Exploring Future Careers in AI - Activity Page (<i>Appendix C</i>) • Writing Utensil • Laptop/Tablet • Government of Canada - Job Bank (<i>Appendix C</i>) • University of San Diego - Want to Work in Artificial Intelligence? 14 AI Careers & Job Outlook [2025] (<i>Appendix C</i>)



Section Title	Est. Time	Group Size	Materials
			<ul style="list-style-type: none"> Career Finder - Job Descriptions (<i>Appendix C</i>)
Section 2: Guess Who (AI Edition)	20 minutes	<i>Small Groups or Pairs</i>	<p>Facilitators</p> <ul style="list-style-type: none"> AI Career Cards (<i>Appendix C</i>) AI Career Glossary (<i>Appendix C</i>) <p>Per Participant</p> <ul style="list-style-type: none"> Headband Velcro
Reflection & Debrief	10 minutes	<i>Whole Group; Small Group</i>	<p>Facilitators</p> <ul style="list-style-type: none"> Writing Surface (e.g. Whiteboard) Writing Utensil (e.g. Marker) <p>Per Participant</p> <ul style="list-style-type: none"> Laptop/Tablet Skills for Success (<i>Appendix C</i>)

Safety Considerations

Safety considerations have been provided below to support safety during this activity, however they are not necessarily comprehensive. It is important that you review the activity and your delivery environment to determine any additional safety considerations that you should be implementing for the delivery of these activities.

Emotional Safety

- Facilitators should understand that participants have different lived experiences and prior knowledge about AI safety, AI, and digital citizenship. This activity may involve or lead to discussions of sensitive topics, such as ethical implications of AI. Facilitators should encourage open, respectful discussions and acknowledge all perspectives. Facilitators should always keep



the participants' emotional safety in mind in these discussions, and defer to training from their institution and training received.

- Facilitators should focus on guiding discussions toward an appreciation for healthy and safe online behaviours, and empowering participants to make responsible, informed and smart choices.

Online Safety

Some components of this activity require the use of devices connected to the internet.

- Facilitators should review the provided videos and read/explore provided websites and materials to determine if they are suitable for your participants.
- Where applicable, facilitators should remind participants to stay on task and only use the links provided within this activity.
- Facilitators should also model and encourage appropriate online behaviour by all participants in the group (e.g., using chat boxes to answer and ask questions, using positive and encouraging language, using devices for the purpose of the task).
- Discuss the use of any online application with your team and/or supervisor and follow any organizational guidelines and policies related to technology use. Ensure participants' privacy and consent are respected.

Curriculum Links

This activity aligns with these components found in the [UNESCO AI Competency Framework for Students](#):

Human-Centered Mindset: Human Accountability

- Learners are expected to be able to recognize that human accountabilities are the legal obligations of AI creators and AI service providers, and understand what human accountabilities they should assume during the design and use of AI. They should also foster an awareness that human accountability is a legal and social responsibility when using AI to assist decisions that affect humanity



and uphold the principle that humans should not cede the determination to AI when making high-stakes decisions. They are also expected to enhance their judgement on, and attitudinal resilience to, the illusive claims on the use of outputs and as well as predictions that AI can usurp humans' thinking and decision-making (p. 37-38).

Human-Centered Mindset: AI Society Citizenship

- Learners are expected to be able to build critical views on the impact of AI on human societies and expand their human-centred values to promoting the design and use of AI for inclusive and sustainable development (p. 45-47).

Ethics of AI: Safe and Responsible Use

- Learners are expected to be able to carry out responsible AI practices in compliance with ethical principles and locally applicable regulations. They are expected to be conscious of the risks of disclosing data privacy and take measures to ensure that their data are collected, used, shared, archived and deleted only with their deliberate and informed consent. They are also expected to be conscious of typical AI incidents and the specific risks of certain AI systems, and be able to protect their own safety and that of their peers when using AI (p. 39-41).

AI Techniques and Applications: AI Foundations

- Learners are expected to develop basic knowledge, understanding and skills on AI, particularly with respect to data and algorithms, and understand the importance of the interdisciplinary foundational knowledge required for gradually deepening understanding of data and algorithms. They should also be able to connect conceptual knowledge on AI with their activities in society and daily life, concretizing a human-centred mindset and ethical principles through an understanding of how AI works and how AI interacts with humans (p. 32-34).



This activity can be connected to the following subject areas:

Science

- Understanding the role of science and technology in society and daily life.

Community Connections

Community connections are suggestions from Actua, grounded in our approach, on how facilitators can adapt the activity to reflect the strengths, interests, and priorities of the community where or with whom it is delivered. Consider the following guiding questions to adapt the activity in meaningful ways:

- **Consult with community:** Are there local organizations, Knowledge Keepers, or community members who could contribute insight or context to this topic?
- **Draw on youth experience:** How can you give participants opportunities to share, reflect on, and apply how this learning is relevant to them or their community? Invite participants to identify what knowledge, who, and where they already learn from.
- **Integrate local examples:** How can you tailor this activity to local or regional interests, industries, or community priorities (e.g. land and environment, health, technologies)?

Activity Procedure

To Do in Advance

Section	Preparation
General	<ul style="list-style-type: none">• Think ahead and be ready to adapt:<ul style="list-style-type: none">○ Determine your delivery method and leverage ideas from the delivery recommendations and adaptations sections.○ While estimated times are provided, it will be helpful to think about how much time you would



Section	Preparation
	<p>like to spend on different activities and discussions.</p> <ul style="list-style-type: none"> ○ While group sizes (individual, pairs, groups) are suggested, many activities are flexible for whatever will work in your classroom. ● Prepare for the content: <ul style="list-style-type: none"> ○ Have answers in mind to share with participants for the various reflection questions asked. ○ Examine the provided materials to determine if they are suitable for your participants. ● Equipment: <ul style="list-style-type: none"> ○ Ensure device, screen and projector are set up.
Opening Hook	<ul style="list-style-type: none"> ● Explore the article (<i>Appendix C</i>) in advance and make note of key skills and attitudes participants may identify to help prompt discussion afterwards. ● Pre-load the websites in the slide deck so participants do not need to type them out.
Section 1: Careers of the Future	<ul style="list-style-type: none"> ● Familiarize yourself with the listed websites and careers in AI (Refer to <i>Appendices A: Careers and Mentor Connections, B: Background Information and C: Additional Resources</i>).
Section 2: Guess Who: AI Edition	<ul style="list-style-type: none"> ● Print and laminate (if possible) the AI Career Cards (<i>Appendix C</i>) as well as the Career Glossary (if using) (<i>Appendix C</i>). Prepare enough headbands to play the style of <i>Guess Who</i> you've chosen for your participant group. Attach a piece of velcro to each headband and a piece of velcro to each AI Career Card.



Opening Hook

1. Using the slides as a guide, remind participants that artificial intelligence (AI) is computer programs created by people that help machines act smart or intelligent - by learning, solving problems, and making decisions like humans do.
2. With participants, create a brainstorm with words associated with “AI-related” and “computer science” careers.
 - a. Possible responses: Working with robots, writing code, artificial intelligence, software engineering, web design, designing and building technology, hackers, scams, cyberbullying, security analysts, apps, viruses.
3. Discuss the following with participants:
 - a. “What excites or interests you about AI?”
 - b. “What do you find intimidating?”
 - c. “Why is AI important in the digital world and why is it important for people to be comfortable with basic AI concepts?”
4. Ask participants a few questions:
 - a. “If you could be anything in the world (career wise), what would you be?”
 - b. “How do you think AI could change what that job looks like in the future – consider positive and negative impacts?”
 - c. “Have you ever thought about careers in “AI-related” or “computer science” fields?”
5. What do you already know about these careers?
 - a. Careers in AI and computer science are broad, and not just about writing code. Teams of people in the computer science field work together to create, test, implement and monitor digital technologies all over the world.



Section 1: Careers of the Future

1. Share the Government of Canada - Study in Artificial Intelligence in Canada webpage guide (*Appendix C*) and ask students to pick one career video (Additive Manufacturing, Ocean Science, Digital Technologies, Agriculture) to watch that interests them most.
 - a. Ask participants to share and reflect:
 - i. What careers did you learn about?
 - ii. Were you surprised to find that these industries use AI? What did you already know?
2. Divide participants into pairs or small groups of 3 and distribute a laptop/tablet, writing utensil, and the Exploring Future Careers in AI - Activity Page (*Appendix C*).
3. Guide participants through their task using the Careers in AI - Activity Slide Deck (*Appendix C*).
 - a. The following websites are career databases that give job seekers and students information about various careers; including their required education, required or recommended skills, job description, and even interviews or quotes from people currently working in the field.
 - b. Participants will work together to explore these websites and make notes to share with the group using the Exploring Future Careers in AI - Activity Page (*Appendix C*).
4. Have participants share their findings with the rest of the group. This can be presentation-style or participants can indicate participation (raise their hands, ask out loud, tapping the desk, nodding their head, etc.) and share their findings if comfortable.
 - a. Ask participants: “Which AI career did you find most interesting? What does someone in this field do?”
 - b. Ask participants: “What type of education might you need to pursue a career in AI?”



Section 2: Guess Who (AI Edition)

There are multiple ways to play the Guess Who game. Listed below are details on how to facilitate individual, or whole group play.

Individual Play

1. The goal of this game is to guess as many careers as possible and help your team by giving others strong clues.
2. Distribute a headband to each participant and instruct them to wear it with the plastic resting on their forehead. With the AI Career Cards (*Appendix C*), give one career card to each participant by securing it to the velcro on the headband.
 - a. Once play has begun, one facilitator will stand in the centre of the game area with the remainder of the cards.
3. Participants can determine what career they have by asking YES or NO questions.
 - a. Other participants can reply:

i. Yes	iii. Could Be
ii. No	iv. I Don't Know
 - b. In order to ensure that all participants are receiving a fair chance at guessing their cards. Participants can only ask one question at a time followed by answering one question for the opposite player. Then they can move on to ask and answer a question with a different player.
4. If a participant thinks they have a prediction, they must go up to a facilitator and ask, "Am I a —?". If the answer is 'no', the participant may resume asking questions.
 - a. Participants can guess their career up to 3 times. If they haven't guessed correctly after the third time they can exchange their career card for a new one.
5. When a participant correctly guesses their career they will keep their card as a point and go to the facilitator with the careers for a new card.
 - a. **Note:** The facilitator can determine how strict they want to be with the names of the careers. For example an "AI Ethicist" could also be called a



“responsible AI designer” or a “fairness expert”. A “Machine Learning Engineer” could be called a “computer scientist” or an “algorithm designer”.

6. The game continues until all the cards have been guessed. The participant with the most points wins.

Whole Group Play

If you have a smaller group, or a group that could use more support in understanding the careers, this version might be the best option.

1. Find a volunteer to sit on a chair in front of the group, and provide a headband for them. Put a career on their headband but don't let them view it.
2. The participant may ask up to twenty YES or NO questions to the other participants to guess the career.
 - a. Other participants can reply:
 - i. Yes
 - ii. No
 - iii. Could Be
 - iv. I Don't Know
 - b. Facilitators or participants may offer a few clues to the guesser from the AI Careers Glossary (*Appendix C*), if they require the support.
3. When the career has been correctly guessed, a new participant takes the seat and begins guessing a new career.
 - a. **Note:** The facilitator can determine how strict they want to be with the names of the careers. For example an “AI Ethicist” could also be called a “responsible AI designer” or a “fairness expert”. A “Machine Learning Engineer” could be called a “computer scientist” or an “algorithm designer”.
4. Continue playing until all the cards have been guessed correctly.

Reflection & Debrief

1. Ask participants: “Why might an understanding of AI become more important to you in today's digital landscape?”
2. Ask participants: “What skills might you need to develop to pursue a career in this field?”



- a.** Share the Skills for Success webpage (*Appendix C*) with participants and have them create a list of the top 10 skills they think someone going into AI could have.
 - b.** Create a brainstorm on the board and gather the skills the groups put together.
- 3.** Encourage participants to learn more about these careers after they leave the session, and share what they've learned with their family and friends.



Delivery Adaptations

How might you adapt the time, space, materials, group sizes, or instructions to make this activity more approachable or more challenging? **Modifications** are ways to make the activity more accessible, **extensions** are ways to make the activity last longer or more challenging.

Modifications

SECTION 1: CAREERS OF THE FUTURE

- Assign a career for each group to explore.
- Choose 1 or 2 sections of a website to explore and discuss together as a group to accommodate reading levels.

SECTION 2: GUESS WHO: AI EDITION

- Have participants or a facilitator act out the career instead, providing verbal hints as needed.

Extensions

SECTION 1: CAREERS OF THE FUTURE

- Have participants take one or all of these career quizzes from the Government of Canada: [Career Quizzes](#).
- Participants can create a short future career profile, doing research into what a day in the life of an AI professional looks like.
 - What types of skills do you need? These can be technical or soft skills, like working in a team or solving problems.
 - What type of training do you need? Do you need to go to college or university? Can you learn on your own?
 - Why does this career interest you?
- For participants also interested in computer science and advanced manufacturing (use of robotics, virtual reality, etc.) direct them to this [Careers of the Future](#) website and ask them to explore some of the careers listed.



- The “Meet the Changemakers” section has short 1-2 minute video interviews with a number of professionals in this field.
- Participants can research how AI may impact the fields that they’re personally interested in pursuing.



References & Gratitude

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Appendices

Appendix A: Career & Mentor Connections

AI/MACHINE LEARNING ENGINEER

- Builds and trains artificial intelligence systems that can learn from data to make predictions or perform complex actions. They support the machine learning researcher.

COMPUTER PROGRAMMER

- Computer programmers write, modify, and test code and scripts in a variety of programming languages that allow computer software and applications to function properly.

MACHINE LEARNING RESEARCHER / DATA SCIENTIST

- Machine learning researchers or data scientists clean and interpret data while building models using a combination of that data and machine learning algorithms.



Appendix B: Background Information

ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) is a branch of Computer Science that deals with a machine's ability to simulate intelligent behaviour. This includes cognitive functions we associate with human minds, such as perceiving, reasoning, learning, and adapting.

AI is becoming increasingly vital in our lives. From digital assistants, GPS navigation, and autonomous vehicles to tools like Siri/Google Home and generative AI tools (e.g., OpenAI's Chat GPT), its impact on our daily lives is growing. AI plays a crucial role in various aspects of work, enhancing efficiency, and taking on hazardous or monotonous tasks. As AI applications grow, discussions on AI ethics and responsible practices are increasingly important.



Appendix C: Additional Resources

GENERAL

- [Careers in AI - Activity Slide Deck](#)
 - **Note:** This link will automatically download to your device.

SECTION 1: CAREERS OF THE FUTURE

Activity Page(s)

- Exploring Future Careers in AI (refer below)

Website(s)

- [Government of Canada - Study in Artificial Intelligence in Canada](#)
- [Government of Canada - Job Bank](#)
- [Career Finder - Job Descriptions](#)
- [University of San Diego - Want to Work in Artificial Intelligence? 14 AI Careers & Job Outlook \[2025\]](#)

Supporting Resources

- [Government of Canada - Career Quiz](#)
- [Careers of the Future](#)

SECTION 2: GUESS WHO - AI EDITION

Activity Page(s)

- AI Career Cards (refer below)
- AI Careers Glossary (refer below)

REFLECTION & DEBRIEF

Website(s)

- [Skills for Success](#)



Careers in AI

Exploring Future Careers

Your Future Career

Choose 2 careers in AI that interest you and explore them online. Use the following guiding questions and jot down notes to share with the group.

What AI career did you find most interesting?

What does someone in this field do?

CAREER 1:	CAREER 2:
<hr/>	<hr/>

What type of education might you need to pursue these careers in AI?

CAREER 1:	CAREER 2:
<hr/>	<hr/>

Careers in AI

While exploring AI careers keep the following questions in mind. Jot down notes to share with the group.

Why is this an important job today?

What skills might you need to pursue a career in this field?

- ---
- ---
- ---
- ---
- ---
- ---
- ---

Careers in AI

AI Career Cards





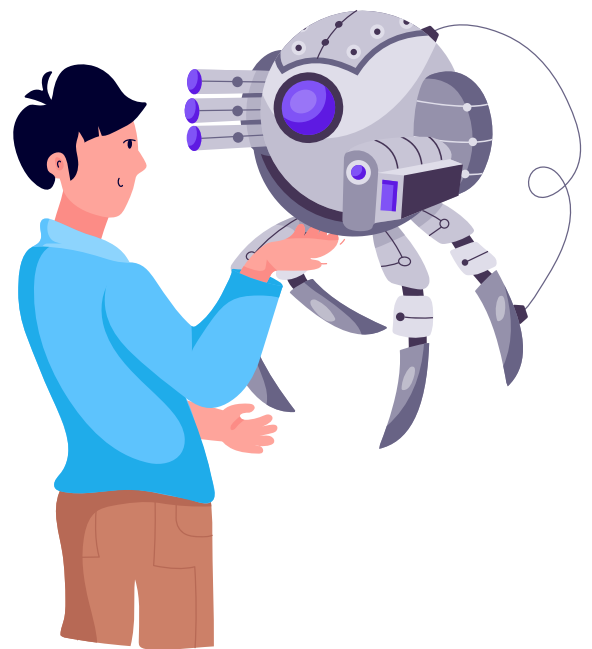
AI Ethicist



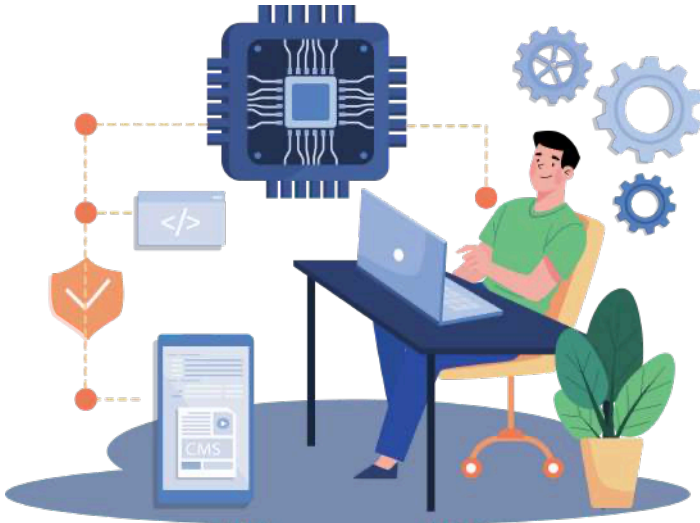
Data Scientist



**Machine Learning
Engineer**



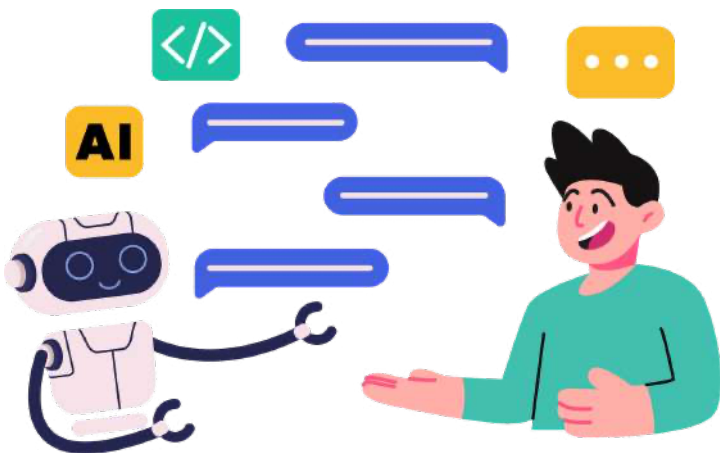
**Robotics
Engineer**



AI Researcher



AI Product Manager



Prompt Engineer



Computer Programmer

Careers in AI

AI Careers Glossary

AI Ethicist

An AI Ethicist ensures that AI systems are developed and used responsibly, addressing concerns like bias and fairness. They create guidelines and policies for the safe use of AI.

Data Scientist

Data scientists are like detectives, collecting, organizing, and analyzing large datasets to find valuable insights and patterns. They use this data to make predictions or inform business decisions.

Machine Learning Engineer

Machine Learning Engineers design and build the algorithms that allow machines to learn from data without being explicitly programmed. They might work on features like the image search function in Google Photos, which groups photos of your dog together.

Robotics Engineer

A Robotics Engineer designs, builds, and programs robots that use AI to perceive and interact with the world. They work on everything from self-driving cars to industrial automation.

Computer Programmer

A computer programmer is a person who **creates computer software**. They write code to build websites, computer games and apps and even intricate software that controls machines and robots.

Prompt Engineer

Prompt engineers have a strong understanding of Natural Language Processing (NLP), which has to do with how humans interact with computers. Chatbots and other large language models like ChatGPT need a human to design prompts that allow the system to respond. Prompt engineers think about human interactions and try to **“train” a computer to respond like a human would**.

AI Researcher

An AI Researcher explores new theories and techniques to advance the capabilities of artificial intelligence. This role is highly focused on developing cutting-edge algorithms, new models, and innovative approaches to solve complex problems that current AI systems can't. Unlike a machine learning engineer who might implement existing algorithms, an AI researcher is the one inventing the next generation of algorithms.

AI Product Manager

An AI Product Manager is a strategic role that bridges the gap between the technical development of an AI product and its business value. They are responsible for defining the product vision, roadmap, and features based on market research and customer needs. They ensure that the AI solution being built is not only technically feasible but also solves a real-world problem for users.



Prompting Questions

1. Do I primarily use programming languages like Python or R?
2. Do I work with massive amounts of data?
3. Does my job involve creating physical robots?
4. Do I spend a lot of time thinking about fairness and bias?
5. Is my job focused on making sure a computer can understand human language?
6. Could my skills be used in a variety of industries, not just tech?
7. Do I work on systems that make predictions or recommendations?
8. Is my job a relatively new one, created by the rise of generative AI?
9. Do I need a strong background in mathematics and statistics?
10. Is my job more focused on research and theory than practical application?
11. Do I often work to protect and secure data from AI-related attacks?
12. Does my job involve working with images and video data?
13. Am I responsible for the overall strategy and development of an AI product?
14. Does my job require a high level of creative thinking?

