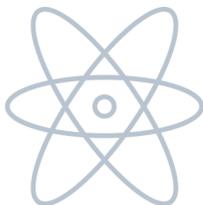# Senior Principal Researcher, Artificial Intelligence

OVERVIEW

Senior principal researchers in artificial intelligence are highly dedicated and motivated individuals who want to push past the existing realities of technology and define the future of artificial intelligence (AI). They have an advanced understanding of the theories of AI, machine learning, and statistics, and they use those disciplines to solve real-world problems. They also think critically about the relationship between people and technology and help to define the ethical considerations that must be taken when developing computer systems that can perform human tasks.
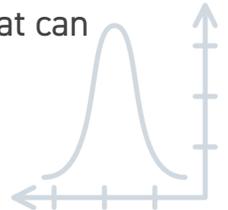
EVALUATE YOUR INTEREST

☐ I love learning about the latest technology and dreaming about what tomorrow's technological innovation might look like.

☐ I have a knack for identifying real-world problems in need of technological solutions.

☐ I am very interested in the ethics of artificial intelligence and the relationship between people and computers.

☐ I am excited about the idea of advanced education and thoroughly committing myself to research and study.

☐ I am self-motivated. I can decide on a question I want to answer, conduct independent research, develop a hypothesis, test it, analyze the results, and communicate my findings without much guidance.

☐ I am interested in advanced STEM subjects like calculus, statistics, physics, and computer science.

☐ I am a strong communicator and work well with others.

CAREER CONNECTION

How does this career affect me?	What are some other similar careers?	How does this career affect the world?
Speech recognition is one example of a computer learning something that previously only humans could do. When you ask your smart speaker or smart phone to tell you the day's weather, it will quickly answer you with the day's forecast. This whole interaction is powered by artificial intelligence. Smart phones and smart speakers learn complex "skills" by machine learning, or the ability of systems to learn by themselves. A smart phone is able to answer accurately because it has learned to identify patterns rather than follow a set of rules it's programmed to follow. This is artificial intelligence in action.	**Software developers** create the computer programs and smart device applications that may be driven by artificial intelligence research. They utilize programming languages and think about the user experience they want to create in order to design the ideal software. **Machine learning engineers** build systems and machine learning models that drive business decisions and customer experiences. They use big data technologies and build systems, tools, and validation strategies that support opportunities for companies to do business in new and exciting ways. **Computer vision engineers** work specifically on artificial intelligence related to a computer's "vision." They develop innovative technologies and solutions that allow computers to gain high-level understanding from images or videos.	Artificial intelligence has changed the way people travel. Map applications are now able to instantaneously analyze large amounts of user data, such as travel speed, accidents, and construction sites, to show commuters the fastest routes to take. If commuters choose not to drive themselves, ridesharing applications are also using AI to figure out what the wait time will be, what the cost will be, and how to match commuters with each other. Even commercial airlines are using artificial intelligence to steer their planes for the majority of their flights. The next AI innovation to upend commuting is likely to come in the form of self-driving cars which may be on the roads in coming years.

TAKE ACTION

☐ Perform an audit of all the examples of artificial intelligence that you can find in your home or school. Identify what the application or program is and what human skill it is replicating or imitating. Share the list with your family.

☐ Think about the trending artificial intelligence application of facial recognition technology—or the way that a computer uses biometrics to map facial features from a photograph or video to find a likely match among faces in a database. Make one list of the potential beneficial uses of facial recognition technology to solve societal problems and a second list of the potential ethical concerns raised by this technology. Discuss the lists with your family and see if you can identify ways that the risks might be mitigated.

☐ Consider a field that is interesting to you, such as healthcare, education, or energy. Identify a company in your community that is applying artificial intelligence in this field, and investigate how AI is helping them solve real-world problems. Share your findings with your class.