Applied Artificial Intelligence

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Want to Work in Machine Learning?

Check Out the Career Landscape [Machine Learning Engineer + Other Top ML Jobs]

Video surveillance, traffic alerts on your smartphones, facial recognition software, personalized product recommendations as you browse a website — these are all examples of real-life machine learning applications.

This vitally important field, a subdiscipline of artificial intelligence, is attracting a lot of attention lately — both for its technological breakthroughs and lucrative career opportunities. Employment website Indeed.com has listed machine learning engineer as #1 among The Best Jobs in the U.S., citing a 344% rate of growth and a median salary of $146,085 per year.

High wage and very fast growth of the field as expected!

Overall, computer and information technology jobs are booming, with employment projected to grow 11% from 2019 to 2029. More specifically, the Future of Jobs Report 2020

Have a Question?

chine learning jobs pay well over $100,000 with some, such as machine learning engineer, paying up to $200,000.

So, how do you become a well-paid machine learning engineer or tap in to other ML- related career opportunities? In this comprehensive machine learning jobs guide, explore top machine learning career paths, the skills required, jobs and salary outlook, and much more.

What is Machine Learning?

First, let's explore the definition of machine learning, which is categorized as a subsection (or type) of artificial intelligence. Machine learning is "all about extracting valuable information from data" — which could be anything from text and video to images and sound. As the name implies, the ability to learn is what separates machine learning from other AI subsets.

Machine learning is all about using data to create predictions to solve real world problems and ease human efforts.

"Machine learning is a branch of AI that gives computer systems the ability to automatically learn and improve from experience, rather than being explicitly programmed. In machine learning, computers use massive sets of data and apply algorithms to train on and make predictions," according to TechRepublic.

When it comes to real-life applications, tech site ZDNet reports, "From driving cars to translating speech, machine learning is driving an explosion in the capabilities of artificial intelligence – helping software make sense of the messy and unpredictable real world."

According to MIT Technology Review, "Machine learning is the process that powers many of the services we use today — recommendation systems like those on Netflix, YouTube, and Spotify; search engines like Google and Baidu; social-media feeds like Facebook and Twitter; voice assistants like Siri and Alexa. The list goes on."

Practical implications of machine learning are huge!

Machine learning is a method of data analysis that automates analytical model building. It is a branch of artificial intelligence based on the idea that systems can learn from data, identify patterns and make decisions with minimal human intervention. (SAS)

Purpose of machine learning

Machine learning is a data analytics technique that teaches computers to do what comes naturally to humans and animals: learn from experience. Machine learning algorithms use computational methods to "learn" information directly from data without relying on a predetermined equation as a model. The algorithms adaptively improve their performance as the number of samples available for learning increases. (MathWorks).

A report from DeepAI.org offers examples of how machine learning is utilized in medical diagnosis, financial market analysis, insurance claim oversight, search engine operations, and more.

What Does a Machine Learning Professional Do?

There are several types of machine learning professionals, and job responsibilities may overlap with other roles, depending on the size of an organization. In general, machine learning deals with complex challenges.

"People interested in machine learning are often problem solvers," according to U.S. News & World Report. "They are motivated by the challenge of finding patterns that others can't see. They develop tools that can sift through huge datasets and find the commonalities. They want to turn the unknown into the known and help make better decisions and produce better results."

Responsibilities of machine learning professionals are that they have to problem solve real world problems and create algorithms that can actually implement machine learning.

One of the most sought-after AI professionals is the **machine learning engineer**, whose responsibilities include building and managing platforms for ML projects. As Discover Data Science explains, machine learning engineers may often double as data scientists at smaller organizations.

"The responsibilities of a machine learning engineer will be relative to the project they're working on," according to Springboard.com. "However, if you explore the job postings, you'll notice that for the most part, machine learning engineers will be responsible for building algorithms that are based on statistical modeling procedures and maintaining scalable machine learning solutions in production."

Read on for insights into key machine learning skills and the machine learning engineer career path.

- Computer science fundamentals
- Programming
- Math and statistics
- Data science
- Deep learning
- Problem solving
- Software engineering and system design
- Artificial intelligence

Skills that someone needs to become a professional in machine learning.

Soft skills are also extremely valuable in machine learning positions. These include:

- Teamwork
- Good communication
- Organization
- Strong work ethic

Steps Toward a Career in Machine Learning

Undergraduate degree

The first step toward establishing a career in machine learning is to secure an undergraduate degree in computer science, mathematics, data science, computer programming or related field.

Experience

As described by Discover Data Science, some machine learning positions may require previous experience in an engineer or artificial intelligence-specific role. For example, it's important to know that a machine learning engineer is not an entry-level position, but one that often requires experience in data science and software engineering — plus an advanced degree. For a career in machine learning, you may want to start in a software engineer, software programmer, software developer, data scientist or computer engineer role.

The field requires an undergraduate degree, some experience in the field, and even an advanced degree such as a PhD or a Master's

Advanced degree

For most machine learning careers, an undergraduate degree will not suffice. A master's in computer science, software engineering, artificial intelligence or machine learning can expand your

An advanced degree in artificial intelligence can prepare students for a wider range of AI- and ML-related opportunities.

8 Career Paths in Machine Learning

Career	Description	Median Salary^
Machine Learning Engineer	Builds and manages platforms for machine learning projects*	$150,000
Data Scientist	Collects, analyzes and interprets complex sets of data by using machine learning and predictive analytics*	$122,579
Natural Language Processing (NLP) Scientist	Works with computers to "understand, interpret and manipulate human language." Draws from computer science and computational linguistics to bridge the gap between human communications and computer understanding.**	$101,574
Business Intelligence (BI) Developer	Analyzes data sets for business and market trends*	$102,276
Human-Centered Machine Learning Designer	Responsible for the "design, development and deployment of information systems that learn from and collaborate with humans in a deep, significant way."***	$116,668
Software Engineer	Researches, designs, implements and supports software solutions.+ Oversees the whole system and uses engineering concepts to develop software.++	$107,294
Software Developer	Responsible for the entire software development process.++	$103,620
Computational Linguist	Teaches computers how to understand human language.+++	$109,168

The variety of options for career paths in machine learning.

** Natural Language Processing (NLP)

*** Responsible AI Can Effectively Deploy Human-Centered Machine Learning Models

+ What Are the Responsibilities of a Software Engineer?

++ Software 'Developer' or 'Engineer': What's the Difference?

+++ Computational Linguist

Machine Learning Job & Salary Outlook

As mentioned, Indeed named Machine Learning Engineer the #1 best job in America for 2019. "With an average salary base of $146,085 and a whopping 344% growth in job postings, machine learning engineer is an extremely promising position. Those considering a career change or new to the workforce might want to consider training for this role. Most machine learning engineers have completed a master's degree or taken an online certification course."

Viable career with tons of opportunities

A recent search for "machine learning" job openings on LinkedIn revealed more than 114,000 results. Among examples featuring salary ranges were:

- Principal Machine Learning Scientist at Amazon ($123k–$178k)
- Machine Learning Engineer at TikTok ($104k–$225k)
- Machine Learning/Deep Learning Engineer, Toyota Research Inst. ($111k–$195k)

According to a recent review by Glassdoor, the average machine learning engineer salary is $129,190 with top earners taking in $192,000.

Overall, the outlook for all types of computer and technology occupations is extremely favorable and expected to grow by about 11% from 2019 to 2029, according to the U.S. Bureau of Labor Statistics, much faster than the national average for all occupations.

Companies Hiring Machine Learning Professionals

On LinkedIn, the long list of companies seeking machine learning professionals features some of the biggest names in business, as well as companies serving a wide variety of industries. Here are just a few:

- Fidelity
- GE
- Google
- Groupon
- Levi Strauss & Co.
- Lockheed Martin
- Lyft
- Microsoft
- Morgan Stanley
- PayPal
- PlayStation
- Salesforce
- Spotify
- Washington Post
- Wayfair
- Zoom

All the big companies have machine learning in demand

Machine Learning Career FAQs

Q: What programming languages are recommended when aspiring to become a machine learning engineer?
A: From TechRepublic: "An IBM report ranked Python, Java, and R as the top languages for machine learning engineers, followed by C++, C, JavaScript, Scala, and Julia."

Q: What are the most popular industries for machine learning positions?
A: Machine learning jobs are available across a wide variety of industries, but according to one LinkedIn report the top sectors being disrupted by machine learning include:

- Healthcare
- Financial services
- Transportation

- Software development

Q: What are the top areas for AI and ML jobs?
A: According to Forbes, New York, San Francisco and Washington, D.C. were the top three cities for AI and machine learning jobs in 2019.

Unsurprisingly, most of the jobs are located in major cities (financial hubs) and have significant pay

Q: What is the salary range for machine learning positions?
A: The salary depends on a number of factors, including specific jobs responsibilities and experience, but typically the low end of the range starts around $90,000 and can go upwards of $150,000 or more than $200,000 for an experienced machine learning engineer.

Take Your Machine Learning Career to the Next Level with an Advanced Degree

High-paying career opportunities in AI, machine learning and related disciplines continued to expand across a variety of industries. An advanced degree in artificial intelligence can position you for success and provide a competitive edge in the growing artificial intelligence job market, which includes machine learning.

The University of San Diego — a highly regarded industry thought leader and education provider — offers an innovative, online AI master's degree program, the **Master of Science in Applied Artificial Intelligence**, which is designed to prepare graduates for success in this important, fast-growing field. This program includes a significant emphasis on real-world applications, ethics, privacy, moral responsibility and social good in designing AI-enabled systems.