Data Analytics & Data Science

CIAT | CALIFORNIA INSTITUTE OF ARTS & TECHNOLOGY

# Table of Contents

Executive Summary

Corporate data management is an increasingly important strategy. Business intelligence companies can now see business analytics as an advantage. Better decisions lead to efficient operations and a better business overall. To gain traction, businesses emphasize data-driven decision-making now more than ever. The data visualization industry is expected to be worth more than $7 billion during the second half 2022 to 2023.

Data Analytics and Data Science careers are in high demand across all industries, including healthcare, technology, retail, government, and transportation. California Institute of Arts & Technology (CIAT) offers several degree programs and certifications to assist prospective students in entering these exciting fields.

$7 billion during the second half 2022 to 2023
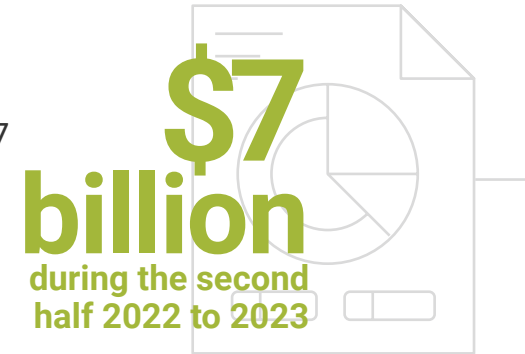
Why Data Analytics?

Data is used for many different purposes and the future for Data Scientists holds a wealth of career options. In the years to come, there will be increased opportunities in the banking, insurance, entertainment, telecommunications, and automobile sectors. Data Scientists can help companies expand their business and improve their performance more efficiently.

With Tech Talent Shortage Inevitable, What Can CIOs Do?

Without talent, there is no true innovation. Without innovation, there is no business transformation. Talent shortages derail human capital management and digital transformation through continuous innovation.

This section discusses the daily challenges of Chief Information Officers (CIOs) and Chief People Officers (CPOs) with recruitment, talent retention, compensation, and productivity goals.

A Lack of Software Engineers is Detrimental to Daily Business

Critical innovation is one of the first areas to suffer as talent gaps increase. To remain competitive, businesses must improve their product development innovation processes. Current workers need to gain digital skills to hire the right people. 46% of enterprise organizations say talent shortages cause delays

Without innovation, companies become less competitive and less profitable. Feature differentiators drive higher revenue and profitability for organizations. Commodity capabilities drive lesser profits and higher operational costs to maintain. Innovations are also critical to breaking into new market segments. With access to qualified talent, organizations can gain the skilled and experienced workforce needed to drive future solution opportunities.

46%
of enterprise organizations say talent shortages cause delays

Despite the diversity of employees and skills on the market, it is crucial for companies to craft talent acquisition strategies. Organizations need a strategy to develop a resource pool of talent. They must create outreach programs seeking a diverse workforce to draw people with different critical skills. More workforce planning is essential for ongoing innovation and capital gains.

Hiring is Challenging With a Shallow Talent Pool

The recent wave of layoffs in the tech industry has confused job applicants. Companies that lay off workers often have open positions. And, tech companies have even laid off employees while hiring for new roles. As a result, top and mid-size technology companies have come under media scrutiny for their communication methods around this issue.

Business leaders have a role in talent acquisition. Their management skills and ability to effectively communicate their corporate vision and strategy are essential for attracting new talent. Recent layoffs in the tech sector have many questioning whether or not business leaders fully understand how their actions may impact talent acquisition. These actions may deter qualified candidates from applying to, or even considering, their organizations.

New tech industry students should be aware of this issue and should know that despite these recent layoffs, the tech industry is, and continues to be, a viable path for career growth.
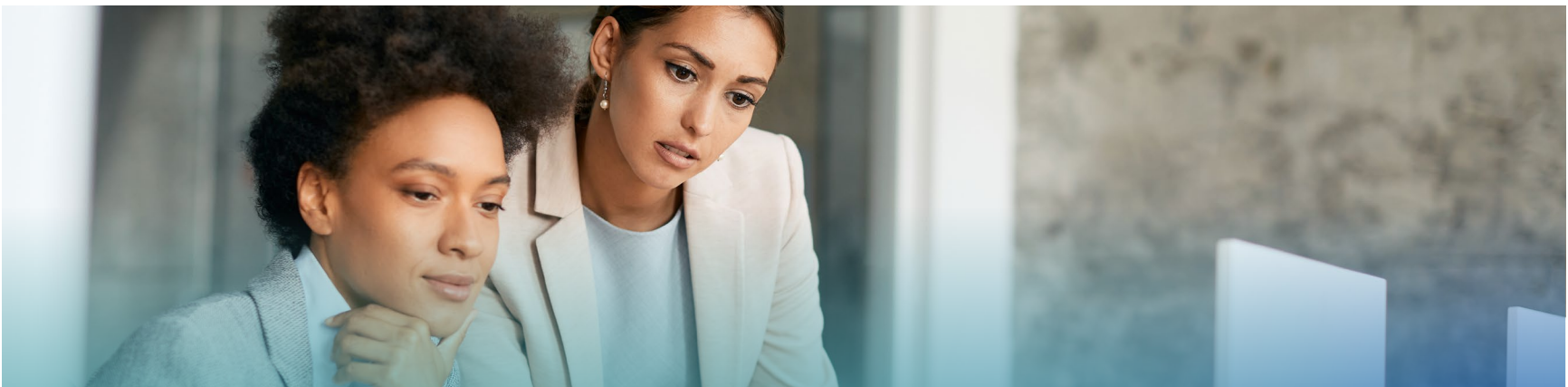
Knowledge for Today and in the Future

Organizations continue to invest in diversity and inclusion to help create a broader pool of candidates. These continuous efforts help create more well-rounded organizations and help deliver more creativity and innovation.

The challenge with any recruiting strategy is finding qualified candidates with degrees and certifications. Many underserved communities and diverse groups need more practical experience and educational opportunities to qualify for many open job positions. Many learning institutions, including CIAT, have several programs to help students of all diverse backgrounds achieve their educational and career goals.

National and global organizations, including IBM, Microsoft, and Facebook, continue to invest in outreach programs to help build a well-qualified diverse workforce to meet their human capital demands.

The Role of Big Data in Modern Businesses

Data can be used and manipulated at the touch of a button for most modern businesses. However, the ability to use that data and interpret the information is easier said than done. New careers are being forged every day to solve that problem.

Data analytics is the process of storing, organizing, and analyzing data for future business decisions or processes. Every truly modern business is in a race to incorporate data and analytics into their day-to-day business decisions to increase efficiency and decision effectiveness.

39% believe their organization is using their data in the correct way

24% see their company as being "data-driven"

But there is a long way to go. A study by NewVantage in 2021 discovered that only 39% of executives believe their organization is using their data in the correct way, and only 24% see their company as being "data-driven."

This is a primary reason why data analytics careers are growing in number and salary faster than nearly every other field. Businesses demand data analysts to help them bridge the gap between the present and the future.
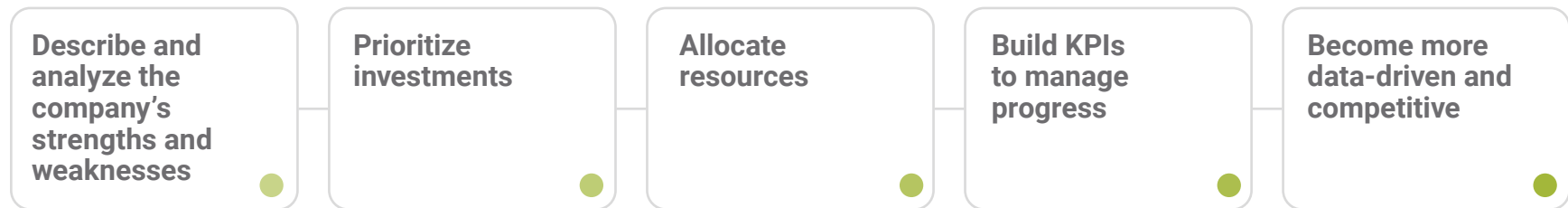
Thousands of schools now offer specialized training in data analytics. For example, CIAT offers multiple different programs, like:

- Applied Bachelor's Degree in Software Development – Data Analytics Concentration

- Associate of Applied Science in Business Data Analytics.

These courses and certificates will help you learn the skills necessary to advance in data analytics, develop your knowledge, and become a competitive job-seeker in the field.

What is Data Analytics in Modern Business?

A data-driven company can be described as a business that uses data to:

Describe and analyze the company's strengths and weaknesses	Prioritize investments	Allocate resources	Build KPIs to manage progress	Become more data-driven and competitive

Data analytics can also help businesses study the effectiveness of their current workflows, analyze different outcomes of processes, automate workflows, and refine them over time to keep them up-to-date.

There are three types of business analytics that can be used to gather this information, and they are:

Descriptive Analytics *what has already happened*	**Predictive Analytics** *what could happen*	**Prescriptive Analytics** *what should happen*

Big data is defined as the use of large volumes of aggregated data points to predict outcomes, determine changes in trends, and target audiences.

What is Big Data and How Is It Used in Business?

To put it in its absolute simplest terms, big data is defined as larger, more complex data sets, particularly data from new sources. These data sets are so large that they cannot be handled by traditional data processing software.

Though systems that store and process large quantities of data are commonplace in data management, big data is uniquely classified by "the three V's:"

Volume	Velocity	Variety
Unlike other forms of data management, big data involves a colossal amount of data processing.	*The speed at which the data is collected and processed. With big data, this happens at an extremely quick pace.*	*The many different types of data being collected and processed.*

These terms were first coined in 2001 by analyst Doug Laney, an employee of Meta Group Inc.

With the rise of big data, two more V's have emerged in recent years: value and veracity. The value reflects how much the data could be worth to a company, while the veracity simply refers to the accuracy of the data.

While there is no specific size limit required to be officially considered big data, big data deployments often involve exabytes of data collected and processed over a period of time.

Big data can come from a number of sources, including customer databases, emails, medical records, and social media networks. It can also include machine-generated data, such as sensor data from manufacturing equipment and other industrial machines. Structured and unstructured data will often incorporate external data as well, including weather and traffic patterns and geographic information. Audio and video files are frequently included as forms of big data, as streaming data is often processed and collected to aid certain companies with big data applications.

What makes big data so important is how it can be used in predictive modeling to help businesses understand patterns and trends that occur when people interact with various systems and each other.

Companies and businesses can use big data to gain a better understanding of the preferences of their customer base, aiding them in creating better marketing strategies, customer service, and other customer-focused actions that will ultimately lead to more business.

Using big data is crucial for companies to maintain a leading edge over their competition. New entrants into an industry rely heavily on big data to innovate and compete with well-established companies.

Businesses that use big data most effectively will hold a large advantage over those that do not, as they will be able to make faster and more informed business decisions. These days, the use of big data is found in just about every sector, from IT to pharmaceuticals.

Streaming companies like Netflix or HBO use big data to recognize and predict customer demand. By identifying key attributes of past and current programs and comparing those to their current success, these streaming companies can successfully build predictive models for new programs and movies, giving them an accurate idea of how successful this new product is likely to be.

Aiding product development is a common goal of big data management, and any popular company will employ it to stay ahead of the curve.

Big data is also extremely helpful in increasing the value of the customer service of a company. Through the collection and processing of data through social media, website visits, and other sources, businesses can
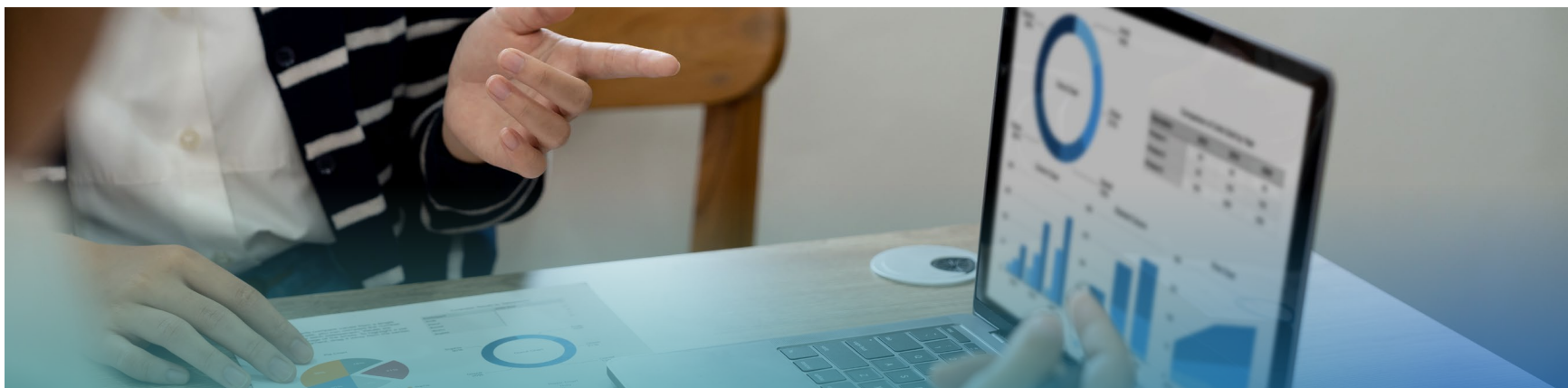
improve the quality of their customer service experience. Faster ticket times, personalized offers, and the ability to handle issues proactively are all due to big data.

Security and IT teams employ big data frequently to aid their efforts. These days, hackers tend to consist of large teams of experts, unlike the single lone-wolf hacker frequently portrayed in movies.

Big data helps to identify patterns left behind by hackers that tend to indicate fraud or security breaches, allowing security and IT teams to react to the problems significantly faster than they would be able to otherwise.

With its increasing use and importance in running a business, big data is creating new opportunities on its own. There is an increasing demand for companies that are able to accumulate and analyze industry data.

These companies hold an immense amount of data about supply and demand, customer intent, service and products, and more. These businesses are in high demand from other companies looking to take advantage of all the available data.

How are Data Analytics and Big Data Important to Modern-Day Programmers and Developers?

The role of programmers and developers in modern-day business is both increasingly important, and increasingly reliant on data analytics.

Data-adept developers are valuable because they help executives make difficult decisions to help drive organizational effectiveness, efficiency, and profitability.

Data analysts and **back-end programmers** work closely together to interpret data and then act on it based on decisions that are made from patterns and trends identified.

Front-end developers can use data to determine how a website or platform should be created and maintained to keep up with current trends and competition.

Beyond using data to construct, data visualization is also essential in all aspects of business. Tools like Tableau and MySQL empower developers and software engineers to communicate more effectively with decision-makers.

These days, software developers are required to know more than just how to program in their chosen languages. Developers now must be experts in collaboration, relying on communication between various teams, their managers, and often even other companies.

big data market size will
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2027
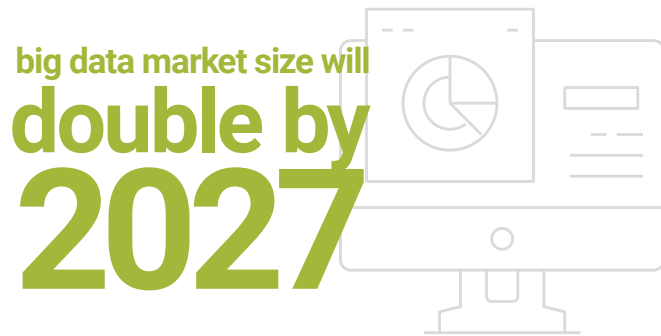
With the increasing use of big data in software development, this type of collaboration is becoming more and more streamlined every day.

While it is used in myriad ways by a multitude of different types of companies, big data's application in software development covers almost every category. From customer service to product development, correctly analyzing big data provides developers information about consumer habits and preferences, potential bugs or errors, key functionality points of an app or program, and much more.

Taking advantage of the availability of this information allows a team of developers to streamline much of the research and development, as well as correctly identify and avoid potential user issues before they ever occur.

A software development team that properly utilizes big data will end up with a product that users are more likely to prefer, and they will be able to get it into the hands of the customer faster than their competition.

Outside of developing their own applications or programs, developers are increasingly being called upon to program predictive analytics systems that can be used in other software applications and business processes.

Many web services rely on such programs to collect and analyze the correct data so that they can provide the insights necessary to give that company an edge. The increasing demand for this type of software development is leading to a tremendous influx of innovation and collaboration.

It has been predicted that the big data market size will double by 2027. With such a rapidly increasing demand for big data management, the demand for developers who have the knowledge to utilize this will increase as well, and will only continue to grow.

Businesses Also Use Big Data, AI, and Machine Learning to Know Their Customers Better

High-performing firms such as Netflix and Amazon use big data, AI, and machine learning that relates to audience segmentation.

Streaming platforms like Netflix use data analytics and AI to make informed decisions on the type of content to invest in for the future. By analyzing watch data in aggregate and cross-referencing it with account data like gender, age, and location, Netflix is using machine learning to make more accurate predictions on what content performs best, and what should be produced down the line.

Further information on the Netflix case study that relates to AI and Machine Learning can be found here.

Similarly, Amazon is using machine learning for several business processes, including:

| Improving customer experience ① | Boosting productivity ② | Optimizing business processes ③ | Speeding up innovation ④ |

Amazon's AWS platform also offers these machine learning tools as a service that anyone can use.

Further information can be found in the Machine Learning on AWS article here.

The most competitive firms in the world agree that data analytics and AI are the way of the future. This is reflected in the demand for data analysts, data scientists, and AI experts.

Fortunately, educational institutions are similarly ramping up their investment in data analytics.

Knowledge for Today and in the Future

A data scientist is responsible for a wide range of operations, including:

Querying data   Data cleansing   Summarizing data sets   Preparing reports

Mining data   Examining and interpreting data trends   Collaborating with pertinent stakeholders

Data scientists are some of the most sought-after professionals in the US, commanding an average salary of $100,560 per year as of 2022.

The potential to continue to learn new reporting functions or tools is endless in this field and is always needed within any corporation, large or small.

What Careers are Available in Data Science and Data Analytics?

Data Science careers have created a buzz recently. Demand for Data Science positions is high and is likely to remain so. Several paths exist to prepare for these rewarding and complicated roles.

The Data Analytics industry encourages prospects looking to break into the Data Science and Analytics fields to review the degree and certificate programs offered at schools like CIAT. This San Diego-based education institution offers several programs to equip students with the knowledge necessary for pursuing a career in data, including:

- 🎓 **Applied Bachelor's Degree in Software Development–Data Analytics Concentration**

- 🎓 **Associate of Applied Science in Business Data Analytics**

- 🎓 **Tableau Desktop**

- 🎓 **Power BI Certification**

This section discusses the positives and challenges in the Data Science and Data Analytic fields and the top roles students should consider when applying for jobs.

Data Scientist − Ready for the Journey?

The U.S. is predicted to have over one million Data Scientists shortages in the next five years. Despite technological advances, gaps in Data Science talent still need to be addressed. Students with analytical skills and domain knowledge around analytics tools with experience in understanding market trends and other custom reports continue to be in high demand.

Data Scientists are proficient in statistical analysis and better equipped than Software Engineers. This career path also requires a passion for information. Predictive models, statistical models, and analytical tools are everyday business functions that help organizations gain a competitive advantage.

For example, Amazon tracks purchases, prices, and searches via data sets, enabling it to personalize the Amazon homepage view. Users searching for camping gear, baby products, or groceries will probably be presented with items that match these parameters on their homepages. This strategy helps users avoid irrelevant ads and product suggestions unrelated to their search queries.

High Demand for Qualified Data People

Data Science covers many areas, with various job roles such as Data Analysts and Analytics Directors. These roles include: Machine Learning Engineers, Business Intelligence Developers, Data and Business Analysts, Data Architects and Data Administrators, and Data Engineers.

Machine Learning Engineer

A Machine Learning (ML) Engineer combines software engineering and data science. Data Analysis requires some knowledge of programming as machine learning is required. ML Engineers design systems to be implemented within organizational processes and procedures.

Business Intelligence (BI) Developer

As a BI Developer, your role is to design and develop strategies that enable business users to access the information they need for easy and informed decision-making. A BI Developer team has high data competency, often using BI tools and creating applications for analysis that enhance the user's understanding of the system.

Organizational leaders leverage BI data dashboards daily to help measure everything from sales data to inventory turnover and patient care. Healthcare specifically has enabled BI to assist with resource allocation to drive nurses scheduling and doctor hours.

Data and Business Analyst

Data Scientists may begin their careers as Data Analysts or Data Engineers. Data Analysts use raw data from system sources. Companies employ personnel from various departments, such as marketing, sales, customer care, and finance, to assist with information processing. They are responsible for cleaning the data and finding solutions to business questions.

Solutions from a Data Analyst may feed into marketing campaigns and other advanced analytics tools powered by artificial intelligence, or may forecast trends for product engineering and development.

Data Architects and Administrators

Data Architects and Data Engineers work together to implement enterprise strategies related to data collection. They develop databases, optimize existing systems and design the data management flow process. Engineers build the infrastructure for such purposes. Data Architects must understand computing, storage, IOPS, and network capacity. The more data the organization hosts to feed into the various analytical programs, the more the hosting platforms need to support scalability and elasticity.

Data Engineer

Data Engineers possess the knowledge to get large quantities of real-time data. They interpret unformulated or unverified data of an unstructured business or division. They maintain a sizable amount of data and create

pipelines to render it accessible for analysis with the data teams. The data from the pipelines created by the Data Engineers will become actionable insights into predictive models. If the Data Engineer provides clean datasets, this will deliver valuable statistical knowledge to the organization. If the data is not clean and has several inaccuracies, this could cause unsound business decisions.

Knowledge for Today and in the Future

Data Scientists are in high demand, with the U.S. Bureau of Labor Statistics predicting a 27.9% increase in employment for this position by 2026.

To be prepared for future job opportunities, individuals should explore various educational and financial aid options to find the right program that meets their career goals while offering job placement possibilities.

27.9%
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2026

What Companies Employ Data Scientists and Analytics Students?

The U.S. Bureau of Labor Statistics estimates by 2027 there will be a 27.9% increase in jobs that require data science skills. However, there currently needs to be more qualified data scientists and analytics talent to fulfill those current openings today. These roles pay well but require advanced education to gain entry.

Data Science professionals are in high demand across various fields, including the five most prominent tech companies:

Degree programs at CIAT prepare students for this fascinating job market. Students considering a career in this field should view the following degree and certificate programs offered at CIAT:

- 🎓 **Associate of Applied Science in Business Data Analytics**

- 🎓 **Applied for Bachelor's Degree in Software Development – Data Analytics**

- 🎓 **Power BI Certification**

- 🎓 **Tableau Desktop**

Students looking for a career in data science and analytics will find many organizations in every market segment, including healthcare, technology, retail, government, and manufacturing, leveraging artificial intelligence and machine learning. These advanced capabilities need qualified candidates to fill the various open job requisitions globally.

Job Forecast for Data Scientists in 2023

Approximately 13,500 data scientist openings are projected to be available annually on average over the next decade; many of these are due to worker replacements or retirement.

Data Science jobs are continually available, meaning tech firms rarely lay off those with data science experience. LinkedIn results show over 200,000 results when searching for a Data Science job. Data scientist employment is forecasted to rise 36 percent between 2021 and 2031, compared to other occupations' average growth rate.

Data Science and Healthcare

Data science can have a positive effect on public health. Wearable health monitors enable individuals to monitor their health, identify potential issues and motivate them to live healthy lifestyles. It can fine-tune diagnoses, facilitate research on curing diseases and prevent the spread of viruses. For example, when Ebola spread in West Africa in 2014, data analysis gave insights on its transmission route, enabling health officials to limit the spread and avert a pandemic.

Who are the Top Employers for Data Science and Analytics?

Deloitte.

Deloitte is a global consulting services firm focusing on taxes, audits, cybersecurity, assurances, private company services, mergers and acquisitions, risk and financial advisory, analytics, and cloud. They also emphasize effective data management and fact-based decision-makers.

CapitalOne

As CapitalOne Data Scientists, employees are part of a team that uses advanced AL and machine learning (ML) technologies to optimize financial data and forward business decision logics. CapitalOne revolutionized the credit card industry by leveraging statistical modeling to customize every offer. Data is at the core of all the company's operations, resulting in its position as a Fortune 200 firm.

HCLTech

HCL Engineering and Data Science Research Services is a well-known provider from India. It accounts for 61 top 100 data analytics, artificial intelligence, and machine learning projects worldwide. HCL works with accomplished international organizations to boost its AI and ML efforts. In the last ten years, it has aided nearly 300 companies in multiple sectors with their AI and ML data learning and algorithm creation.

amazon

Amazon utilizes analytics to understand customer needs and collaborates with startups to develop career opportunities in projected growth-oriented fields, including medicine, computer engineering, robotics, and software engineering.

Amazon's subsidiary, AWS, is the largest market share holder in cloud infrastructure services. Data is crucial in delivering an optimal customer experience on all Amazon platforms. The Automated Reasoning Project works to improve security, quality, and availability through formal logical decision-making, AL, and analytics.

Microsoft is well-known for consumer software, but they are also successful in Data Science. They offer services and products to users, developers, and organizations. Their AI for Earth initiative provides open-source tools, data, infrastructure, models, and APIs to help use AI in sustainability practices. Additionally, their AI for Accessibility Project seeks to use AI technology to support those with disabilities.

E Y is a global accounting and professional services provider that offers various services, from strategic consulting to developing capital allocation strategies. They utilize analytics, data, and AI-enabled tools for risk management, operational optimization, and generating new revenue streams.

Google's most valuable resource is its data. It collects data from websites that use either AdSense or Google Analytics and uses this information to study user behavior. This helps improve the quality of its products and services. Moreover, Google provides excellent financial benefits and salaries beyond industry standards.

Walmart uses data analysis and mining techniques to help inform product recommendations, supply chain optimization, product assortment, and improve store checkout.

Knowledge for Today and in the Future

Companies are increasingly relying on data-based decision-makers. There is a need for Data Scientists with the capability to interpret large amounts of real-time data. Additionally, Data Scientists are expected to identify and address issues that could impact a company's success.

Big data is transforming industries across the globe. As data increasingly helps companies gain valuable insights and make more informed decisions, it's no surprise that Data Science jobs are also growing exponentially.

The world continues to generate more data each day. Organizations have recognized the value of mining their data using artificial intelligence and machine learning to find trends to help increase their revenue. Data Scientists and Analytics Engineers help make sense of the data by making the content usable for product development, customer experience, and monetization. Attending institutions like CIAT helps give students the foundation of knowledge needed to seek a career in this exciting field.

Does Demand for Data Scientists Align With Salary Ranges?

Understanding the Salary Ranges and Opportunities

Salary.com says the average salary range for a Data Science (DS) and Data Analytics (DA) Engineer in the United States is between $138,151 and $169,121—several factors, such as certifications, additional skills, and years of experience, affect this range.

Even in entry-level positions, higher salaries for Data Scientists (DS) and Data Analysts (DA) generally presume previous work experience within Software Engineering or other IT-related jobs. Those skills are essential for all candidates considering moving into this incredible and fascinating field.

Prospective students wanting to break into the Data Science and Analytics fields should review the degree and certificate programs offered at schools like CIAT. This San Diego-based education institution offers several programs to assist students with the knowledge to pursue a career in big data, including:

- Applied for Bachelor's Degree in Software Development–Data Analytics Concentration

- Associate of Applied Science in Business Data Analytics

- Tableau Desktop

- Power BI Certification

This section discusses the various pay scales, education requirements, expertise, and job titles in the Data Science and Analytics industry.

The Experience Factor in DS and DA

The amount of experience a DS and DA have helps determine their salary. Experience with various skill sets can help a candidate land higher entry-level and advanced salaries. These skills include:

| Analytical Skills | Technical Skills | Artificial Intelligence Skills | Machine Learning Skills | Statistical Analysis Skills |

These skills also have a correlation to career progression within this field. The role of a DS and DA will continue to change to meet the demands of monetizing, securing, and optimizing big data. Obtaining additional skills and experiences can help with future advancement in this field.

Entry-Level Data Science Salary

Entry-level professionals seeking a role in DS and DA will get paid well. According to Payscale, the average annual salary for Data Scientists is between $70,000 and $137,000. Many employers will create custom job

descriptions to align their base salary ranges with the cost of living in their respective areas. However, a lack of practical experience may result in a lower wage.

Common DS and DA Roles and Their Salaries

Earning opportunities for experienced DS and DA professionals reflect the hard work associated with these roles. In DS and DA, there are several common roles that drive daily business decisions.

Various industries offer DA and DA candidates career opportunities, including Healthcare, Fintech, Federal Government, Ecommerce, Cloud Data, and Machine Learning Technology.

Below are the base salaries and job titles for some of the most common DS and DA roles:

Business Analyst: $98,000 – $148,000	**Database Administrator:** $97,000	**Business Data Analyst:** $86,000
Statistician: $82,000	**Senior Data Scientist:** $141,000	**Data Scientists:** $122,000

Job Outlook Beyond 2023

A qualified data analyst is crucial as data continues to expand. The U.S. Bureau of Labor Statistics predicts a 25% increase in Data Analyst jobs from 2020 to 2030. Over 80% of companies using big data will turn to the job market to evolve their workforces.

25% increase in data analyst jobs from 2020 - 2030
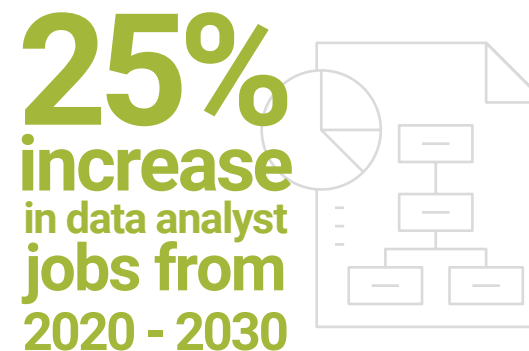
Advanced Career Paths in DS and DA

Data Scientists are in demand due to their valuable contributions to companies. However, finding an individual with all the necessary skills can take time, and there is significant competition in the hiring process. Employers often offer high salaries to attract talented data scientists.

Mid-level roles may demand advanced knowledge of computer vision, algorithms, and Cybersecurity, as well as sophisticated problem-solving skills. Advanced roles, such as DS and DA managerial roles, may demand business acumen, scientific curiosity, leadership skills, and communication skills.

Candidates for more senior roles in DS and DA often hold advanced degrees in Mathematics, Statistics, Computer Science, Engineering, or Economics. Pursuing a master's degree in Data Science and Data Analytics can offer exceptional growth opportunities.

Knowledge for Today and in the Future

The employment outlook for Data Scientists appears favorable, with a projected growth of 36% from 2021 to 2031, exceeding the average for all occupations.

The salaries for DS and DA careers are rising with the demand for skilled professionals. Focusing on education and certifications can help professionals develop these critical skills and expand their career opportunities in the Data Science and Data Analytics fields.

What Is Tableau?

Companies don't just collect data for the sake of collecting it. That data needs to be turned into something much more crucial: actionable business intelligence. Because of this, there are several products on the market that are known as visual analytics platforms. This enables taking data, and allowing it to be viewed in a way that leads to solid decision-making.

One of the best visual analytics platforms is Tableau from Salesforce. Having a deep understanding of Tableau and how to utilize it for business decision-making is a skill that's in high demand.

In this section, we will take a deeper look at how this platform works, and what kind of jobs you might get as a Tableau expert. When you are ready to start your journey to landing that position as a Tableau Analyst, CIAT can help get you there.

For example, the following is a recommended course from CIAT that focuses on Tableau:

Tableau Desktop

What is Tableau Used For?

Tableau was founded by three individuals at Stanford: Chris Stolte, Pat Hanrahan, and Christian Chabot. They pioneered an easy drag-and-drop workflow that made for a highly intuitive interface. Salesforce acquired them in 2019, who continues to improve and market the product today.

Tableau is trusted by some of the biggest and most successful companies across various industries, such as:

verizon✓	charles SCHWAB	Honeywell	Lenovo	and many more...

Data Analytics is all about cutting through the jumble of numbers and figures from various sources to see the real picture of what's actually going on. Tableau focuses on building a highly interactive and usable user experience (UX).

Through a variety of graphs, charts, heat maps, and more, Tableau allows companies to know what products are selling and where, how various price points are impacting profitability, where to invest, and much more.

It's engineered to be highly flexible, so no matter the size or industry, data can be viewed in a way that's useful. It also supports the highest level of security, so data is safe.

The kind of analytics that Tableau can provide is indispensable for businesses. However, it takes qualified professionals to be able to gather the data and interpret the results.

This is why professionals who are educated and certified in Tableau are in such high demand. They are also highly compensated with great salaries and benefits due to their importance in accomplishing core business goals.

There are three major products in the Tableau portfolio. They can be integrated using the "Tableau Cloud." The three products are:

Tableau Data Management *brings together various data flows*	**Tableau Desktop** *the premier tool for accessing and analyzing all of a company's data, no matter the source*	**Tableau Prep Builder** *a data preparation tool for cleaning, combining, and shaping data.*

With so many companies utilizing Tableau for their data analytics, it's no surprise that it's a skill that's in high demand. Let's take a look at just some of the jobs you might be able to land if you are an expert in Tableau.

What Types of Jobs Can I Get with Tableau?

Demand for Tableau is growing. The platform is viewed as being an industry disruptor and giving more established systems like Power BI from Microsoft a run for their money. This is why having skills in Tableau can put you in high demand for several types of positional.

Tableau Consultant

A consultant can work independently or in-house. These individuals need to possess a solid understanding of the Tableau interface. They often assist with the implementation of Tableau within a company and help them gather, clean, and report the data.

Data Analyst

This is usually an in-house position where you prepare and present the finalized reports produced within Tableau. While you aren't necessarily making the business decisions, the insights you develop from interpreting the data results are a huge factor in what companies decide to do. This is why this is a position of the great responsibility that is in high demand.

Business Analyst

While this is related to being a data analyst, it takes it a step further. As a business analyst, you'll work with high-level individuals within the company or organization to see how those data insights can be put into action to accomplish business goals.

How Do I Learn Tableau?

The best place to learn a skill like Tableau is through an accredited educational program. CIAT provides high-level courses in Tableau, where you'll learn not just the interface itself, but related topics like:

Data preparation	**Connecting to sources**	**Building data modeling**	**Data analysis utilizing charts**

CIAT offers an Associate of Applied Science in Business Data Analytics that can help you rocket your way to the top of the talent pool. Once you land that first step, you'll have the solid foundation to progress in your career to higher levels of responsibility and compensation.

Knowledge for Today and in the Future

Start by enrolling in an accredited technical college like CIAT. There you'll learn platform-specific skills like Tableau. You'll also learn background competency in things like SQL, theory of data analysis, and more. This will help make you a well-rounded candidate at the head of the pack when it comes to applying for a job.

CIAT is made up of a great team of industry leaders in software development, applications, and platforms like Tableau. They are joined by highly qualified career counselors who can help you navigate the complex journey of landing a job in Tableau.

They offer what few other educational programs can with:

| **Hands-on training** | **Small class size** | **In-person and online courses** | **Full accreditation** | **Wide range of certification and degree options** |

Whether you are new to the tech field, or currently an IT professional, you can take your career to a higher level by learning Tableau.

What Is Power BI?

Today's computing solutions are collecting more data than ever. While this is certainly a positive development, that data is only useful if it can be effectively visualized. Gaining insight into data is where the rubber meets the road in actually turning raw information into actionable business intelligence.

Microsoft came up with a great solution: Power BI. This collection of data visualization products is changing the way people are able to make use of data and make better business decisions.

Knowing how to use Power BI can give anyone a leg up in getting a high-paying job in a variety of different industries. In this section, we'll take a look at exactly what Power BI is, and what kind of job opportunities there are for people who have the skills to know how to use it. When you are ready to start learning, CIAT has industry-leading instructors who can help you achieve your career goals.

Here are some recommended courses and certifications offered at CIAT to help with your Power BI journey:

- **Power BI Certification**
- **Applied Bachelor's Degree in Software Development – Data Analytics Concentration**
- **Associate of Applied Science in Business Data Analytics**

What is Power BI Used for?

Power BI is what's called a "business intelligence tool." It combines the following disciplines:

Business Analytics	Data visualization	Best practices

When these three types of specialized practices are combined, they lead to exciting ways in which raw data can be turned into actionable information. This is precisely what businesses need to make decisions that relate to things like sales, marketing, human resources, capital investments, new product lines, CRM, and more.

To accomplish this, Power BI can get data from a ton of different sources. It seamlessly integrates with cloud databases such as Microsoft Azure. It can also accept data in several formats like:

Excel Workbook	AMX	PDF	JSON	Many more

Machine learning is certainly the direction that business intelligence is moving. Power BI has tools built right in that support this. When it's time to present the data, Power BI has several options to actually help visualize the data in the form of charts and graphs that can easily be shared with the team.

What Types of Jobs Can I Get With Power BI?

Businesses of all sizes are growing in their ability to amass large amounts of data. That's only half of the battle. They need highly skilled individuals who can help turn that data into a driver of sensible decision-making.

For this reason, there are many different jobs that a qualified person could land if they have demonstrated skills in Power BI. Let's take a look at a few.

Power BI Analyst

Any person who is generally skilled in not just Power BI, but the entire spectrum of Microsoft business products would make a great candidate for Power BI analyst. As an analyst, you'll be at the helm of the Power BI dashboard, taking the raw data collected, and turning it into useful reports.

This will require understanding how to connect Power BI to the data sources it needs. This requires some level of understanding of these other platforms, such as:

SAP	SQL Server	Salesforce

The analyst is a more entry-level position. However, you'll need a solid educational background from a technical college like CIAT to understand how to utilize the Power BI platform.

Power BI Consultant

These individuals start with solid skills in using Power BI, collecting data, and producing reports. Then, to become a consultant, you have to be able to add in project management skills. This means being able to work with a wide variety of clients and assist them in the entire process of business analytics using Power BI.

This isn't an entry-level job. You'll need to spend a fair amount of time building your technical and interpersonal skills to be ready for it. However, when you are qualified, this can be a really lucrative career.

Power BI Developer

Developers utilize the highly important skill of data modeling. They use the Power BI desktop application to help implement Power BI analysis in enterprise situations. It requires an understanding of data visualization. This

makes you highly valuable to companies who want to use the data they've gathered to make solid business decisions.

Business Intelligence Analyst

To become a more general business intelligence analyst, Power BI will need to be just one of the skills you possess. You'll also need a solid understanding in other data analytics platforms, and both database and scripting languages.

By having a broader set of skills, along with at least a bachelor's degree, you'll be in high demand from many companies. They need highly qualified individuals to manage the entire process of gathering and synthesizing data; then making high-level business decisions.

Knowledge for Today and in the Future

Begin your journey of developing high-level competency in Power BI by enrolling in a top-level technical college like CIAT. Their instructors have years of industry experience, and can help you stand out from the crowd when you go for that first interview.

CIAT's 2-part Power BI class covers a host of different topics you'll need to land one of the lucrative jobs mentioned above. You'll cover things like:

Retrieving data from different sources	Cleaning and transforming data	Optimizing model performance	Enriching reports, making them highly usable	Managing workspaces

Once you have the training and background in Power BI, you can take the Microsoft Power BI Certification Exam. Gaining certifications is the number one way to begin working in the field and putting your skills to use.

What is the Role of Snowflake in Cloud Analytics?

A Closer Look at Snowflake: A Cloud-Based Analytics Data Platform

Snowflake offers data storage and analytics capabilities supporting data warehouse modernization. Snowflake gives companies an efficient and cost-effective system for storing and retrieving information, and access to advanced analytics capabilities.

Many global and national corporations, including several opportunity employers, leverage Snowflake analytics daily to rationalize their data.

Anyone working toward a career in Data Analytics should stay up-to-date with Snowflake cloud data warehousing and data analytics solutions. Several degree and certification programs offered at CIAT provide a critical foundation of data analytics knowledge, including:

- Applied Bachelor's Degree in Software Development – Data Analytics Concentration

- Associate of Applied Science in Business Data Analytics

- AWS Database Specialty Certification

Discover the role of Snowflake in cloud analytics, cloud data, and cloud data warehousing below.

New Cloud Workloads

Cloud analytics modernization creates another class of cloud-based workloads to provide more business insights to their organization. Cloud-based workloads run within hosted infrastructures, also called infrastructure-at-services (IaaS). This solution involves creating storage, computing, and networking resources to support startups, and, eventually, moving more enterprise workloads into the cloud, including structured and unstructured data.

The cloud workload goes beyond e-commerce and becomes more diverse because of these critical data workloads. The number of interesting new technologies we see today are using AI to integrate applications to provide data in an incredibly accurate and scalable way. Moreover, a growing number of analytics databases are being created and marketed by data storage services.

Benefits of Using Snowflake Data Cloud

Snowflakes provide an excellent solution for storing data on a cloud-based server. Snowflake aims to give business users the most secure and cost-efficient method of storing and getting information.

The platform also offers many functions that help with managing or processing information. This feature includes scalability, performance, and accessible information from multiple sources.

Understanding Snowflake and the Data Warehouse

Enormous data warehouses enable companies to create and maintain large quantities of data. These records are used to assist decision-making or improve consumer service. Snowflake integrates with data storage environments for businesses as an effective, secure, and cost-effective solution.

Is Snowflake an Analytics Tool?

Snowflake provides data analysis tools to its customers across the globe. Snowflake has developed an international partner ecosystem for its cloud-based data warehouse.

Understanding the Complex Relationship Between AWS and Snowflake

Snowflake Inc. built its data warehouse business on top of Amazon Web Services. Snowflake is a data warehouse built for the cloud. It provides enterprises with a cost-effective combination of data warehousing, big data platform flexibility, and cloud elasticity. Snowflake is a AWS Partner Network (APN) member and is available in AWS Marketplace.

As AWS and Snowflake became increasingly more competitive, eventually progressing to the point where Snowflake was encroaching on the domain of AWS Redshift and AWS began adding features similar to those that Snowflake offers, Snowflake chose to innovate further instead of engaging in market competition. They added multi-cloud support, data-sharing abilities with solid governance, and clean data rooms. Last June, they even extended their platform further by permitting developers to develop applications on top of the Snowflake platform.

What Job Titles Leverage Snowflake in Their Daily Tasks?

Data sciences, analysts, and analytics engineers leverage tools like Snowflake daily.

Data Engineers

Snowflake supports many data integration and processing tools. The ability to deploy virtual warehouses within milliseconds and instantly scale computing power makes for an exciting solution for ELT-style data engineering.

Data Scientists

Snowflake's scalability and ability to rapidly process terabytes of data make it an ideal choice for data science professionals. It also boasts excellent integration with machine learning and a wealth of data science partners, which makes creating and deploying machine learning solutions much easier.

Knowledge for Today and in the Future

Snowflake provides enterprises with an easy way of gaining access to information from multiple sources, such as cloud and on-premise. This product offers high scalability and a multi-cloud infrastructure environment enabling companies to expand security and compliance capabilities as they grow.

Snowflake is a prominent provider of a Cloud Data Warehouse platform and was acknowledged by Gartner as a leader in this domain for three consecutive years, up until 2021. Its low-maintenance administration and capability to ingest, process, and query data with minimal latency makes it an outstanding option.

Who is Databricks?

Databricks enables customers to manage their data—from Business Intelligence or Power BI to machine learning—allowing them to store, clean, share, analyze, and model while monetizing their data into additional revenue for an organization.

Those interested in studying or pursuing a career in Software Development and Data Analytics should explore more information about Databricks. Many prospective employers running their business intelligence and analytics workloads in the cloud leverage this technology today.

CIAT offers the following programs to help students develop fundamental data analytics skills and knowledge:

🎓 **Applied Bachelor's Degree in Software Development – Data Analytics Concentration**

🎓 **Associate of Applied Science in Business Data Analytics**

🎓 **AWS Database Specialty Certification**

This section will discuss the importance of Databricks inside Microsoft Azure Cloud, Google Cloud, and Amazon Web Services.

What are the Business Use Cases for Databricks?

Customers can create applications for various data structures, compute clusters, and access cloud data warehouses through the platform. Organizations accessing a Lakehouse can effortlessly develop and apply data engineering workflows, machine learning models, and analytics dashboards that provide insights into an organization.

How Does Databricks Machine Learning Operate?

Databricks integrates MLflow and the Databricks Runtime for Machine Learning (ML), enhancing its core technology to accommodate data scientists and ML engineers with standard tools and custom tools.

Automated workflow can test Databricks Machine learning models manually. The machine learning workflows allow users to access Databricks Workspace to access many asset types, including Models, Clusters, Jobs, Interactive Notebooks, and Notebook Revisions.

Why is the Databricks Lakehouse Platform so Popular?

Data-centric companies will find Databricks ML and analytics valuable to support their business models for large-scale data processing.

Azure Databricks offers a cloud-based platform for analytics queries, with user interfaces and cost-effective compute resources to ease administration. Databricks SQL query editors or notebooks can conduct queries on data stored in the Lakehouse, providing scalability and affordability.

Who Uses Databricks?

Databricks provides data and support to many companies, like Coles, Shell Oil, ZipMoney, Healthcare Direct Atlassian, and HSBC. Shell uses Databricks to monitor a network of over 200 million petrol valves, predicting when the next leak might occur.

Databricks helps companies to solve their business needs quickly using the latest data technology.

Why is Databricks Platform Critical to Cloud Analytics Platform?

Data scientists, business analysts, data science experts, and machine learning researchers all use Databricks. It has broad and powerful features.

Databricks is a data mining application with four software platforms accessible via SaaS interfaces. This platform provides people with an information services platform at a reasonable cost. The technology base enables data scientists to be productive and efficient. Databricks is a cloud-native services package that reduces fragmentation in the industry, making it easy for users to use the tool.

Does Databricks Run Inside of the Public Cloud?

Databricks integrates with existing cloud providers, including Amazon Web Services, Microsoft Azure Cloud, and Google Cloud platforms. The Databricks compute clustering relies on Azure Virtual Machines in Azure and Kubernetes in AWS for provisioning. Clustering of computing tasks must still be done with either Azure virtual machines or Kubernetes.

How do Organizations Leverage Azure Databricks?

The Azure Databricks platform architecture consists mainly of the infrastructure used by Azure Databricks to create, configure, and manage platforms and services. Unlike most data storage platforms, Azure Databricks doesn't require transferring your data into a proprietary storage system to access the forum.

Knowledge for Today and in the Future

Today, businesses depend on data-driven decision-making, relying on Data Analysis and Big Data to process large amounts of data from different sources. This makes having a quick, dependable, expandable, and user-friendly workspace essential for Data Engineers, Data Analysts, and Data Scientists.
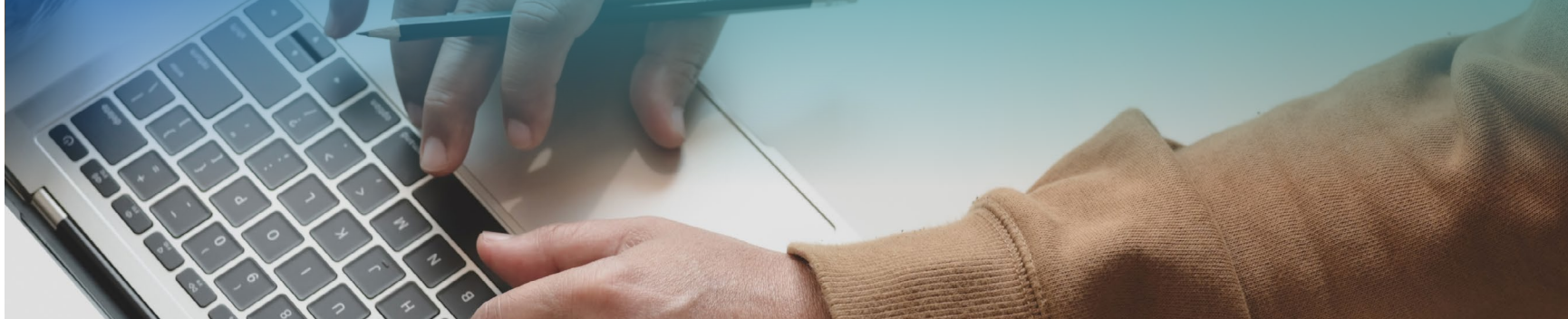
Learning and Applying Data Analytics, AI, and ML for Cybersecurity Field

Students considering a cybersecurity data science and analytics career will discover an incredible future in this domain.

The future of all organizations, no matter what marketplace today and in the future, will be to leverage artificial intelligence (AI) and machine learning (ML) to create valuable data analytics.

This section will outline the basics of AI and ML; how AI and ML will impact the marketplace; and how cybersecurity careers can leverage AI and ML in the future.

For those considering a career in Cybersecurity and Data Analytics, CIAT offers several degree and certification programs to provide a excellent foundation of knowledge, including:

- 🎓 **Applied Bachelor's Degree in Computer Information Systems – Cybersecurity Concentration**

- 🎓 **Applied Bachelor's Degree in Software Development – Data Analytics Concentration**

- 🎓 **CompTIA Security+ Certification**

- 🎓 **CompTIA Data+**

What are AI and ML?

Artificial Intelligence (AI) is a concept that has existed for quite some time. It was only recently able to harness enough computing power to create something that could be considered artificial intelligence, or intelligence (perceiving, inferring, and synthesizing information) demonstrated by machines. AI needs a massive amount of data to be relevant. Analysis from security alerts, financial transactional data sets, and customer information all feed into AI.

Machine learning is a field of AI and computer sciences that uses computers to emulate human learning processes. Data from AI feeds into machine learning models to create data sets for practical application.

Let's take, for example, an organization that has terabytes of information containing customer sales information for the last three years. With AI, that organization can process the data and look for valuable components and elements. AI can then feed the resulting features into machine learning. The resulting data set could include which products sold the most in a specific peak time during the year for the organization.

Deep down, machine intelligence is just another type of AI. It mimics how our brains function by using multiple levels of processing to solve problems.

Where are AI and ML Going in the Marketplace?

All organizations generate a massive amount of data. Finding a statistical analysis structure leveraging machine learning models, business intelligence, human intelligence, and predictive analysis provides a means for organizations to monetize their data. AI processes the data sets into rational components that feed into machine learning to create valuable analytics data.

Developing ML-powered analytic applications for business users has required deep knowledge of both ML and business processes. It also involved complex collaborations among people who were more comfortable using workflow and visualization tools than prompts and command lines.

The principles of statistics can be used across almost any industry. Businesses use statisticians to analyze trends and patterns to inform future business decisions. Usually, existing historical records are examined so existing trends can be detected.

Students studying data analytics should have a strong background in statistics and probability mathematics, computer science, Python, and the basics of data science. Each of these domains comprises the data analytics role within an organization.

What is the Role of Data Analytics in Cybersecurity?

What if, for a moment, a hacker compromised the AI engine before sending the data components to machine learning? What if a cybercriminal had been manipulating the data lakes and data warehouses in the cloud for over a year? What would happen to the organization if the output from machine learning data sets showed sales and business trends that were not true?

The role of a cybersecurity analyst with a degree in cybersecurity and data analysis would become invaluable to the organization. Protecting the big data, ensuring the AI engines do not become compromised, and safeguarding machine learning algorithms are critical to any modern organization. Companies spend millions of dollars on data analytics projects. A cybersecurity event would ruin these projects and, more importantly, the organizations themselves.

Security professionals know machine learning tools only work if they are protected. Most organizations' potential vulnerability to AI and ML systems is relatively high. A cybersecurity strategy designed to protect AI and ML systems from ransomware and malware attacks is vital.

With the increasing adoption of data analysis tools, cyber security analysts are increasingly viewed as experts who cover multiple facets of cyber security.

Threat Intelligence

There are several different kinds of security issues that could affect a network. Knowing the different types of security issues and how they might appear in a network is the first thing security analysts should do when trying to detect any problems.

Intrusion Detection and Response

Intrusive monitoring tools may be better suited for detecting known attacks, but they're still helpful for any security analyst.

Risk Analysis

When dealing with potential cyberattacks, security analysts must be able to convey the level of risk. A company cannot afford full-scale responses for every attack. Security has become a business imperative, and so companies need to build a financial case for taking action (or not) against threats.

Data Analysis

To understand *why* something happened, you need to know what usually happens. AI and automated systems use past performance to predict future outcomes. Knowing how to create and update models is an advanced skill set that can pay off for any security analyst.

What is the Role of a Cybersecurity Data Analyst Engineer?

By 2023, there will be an estimated 1.5 million cybersecurity professionals shortage. Don't expect the need for cybersecurity experts to decrease anytime soon.

A cybersecurity data security analyst works to protect organizations from cyber attacks and security breaches by protecting their organization's network infrastructure, including computers, servers, and software applications. A cybersecurity data analyst should be able to identify common vulnerabilities, suspicious activities, and future attacks. Bad actors recognize the value of hacking into organizations' big data and AI systems.

The cybersecurity analyst also focuses on several sub-cybersecurity domains, including:

Configuring SecOps, DevOps, and NetSecOps tools: These might include antivirus software, password protection, and vulnerability management software, which will evaluate what the company requires and then provide them with the right security solutions.

Analyzing security alerts

Performing security monitoring and reporting: An expert will analyze the current state of the network and determine whether anything unusual is happening. They will then identify which parts of the network are protected and which aren't.

Evaluating weaknesses and vulnerabilities in critical systems: A good security team doesn't just focus on one aspect of security; they look for vulnerabilities everywhere. They constantly test their systems and find ways to improve them so that no one can get into their system.

Staying current on security risks, network security standards, and cybersecurity issues impacting their industry

Managing adequate security measures

Knowledge for Today and in the Future

Data analytics is an exciting new field. It's increasingly complex, yet it also adds incredible value to any organization. Students looking for a career with unlimited growth for years to come should consider becoming a cybersecurity data analyst engineer. The need for a qualified engineer could not be greater than now. The cyber threat landscape continues to grow across the globe. Entry-level and specialized positions in cybersecurity continue to be in great demand.