Data Science vs Software Engineering: Useful 10 Comparisons

The term "information technology" is comprehensive. If you dive into the world of IT, you will feel lost when you try to sort out the right career path for you. There are plenty of specializations, such as AI, web development, networking, software engineering, data science, cloud computing, and so on.

In this piece, we're going to compare software engineering and data science from various angles.

Data science is currently a hot IT field that pays well, while software engineering has been around for quite a while now. With that said, both have its special place and pay well.

Learn Python for Data Science or Software Engineering

If your understanding about software engineering and data science is a big question mark, you will be free of it after giving this piece a read.

Dissecting data science and software engineering

Without further ado, let's discuss the differences between data science and software engineering.

— Scope

One study predicts that the total volume of data will reach 44 zettabytes by 2020.

The focus is no more about the collection of data, but about the filtration, analysis, and visualization of data to gain useful insights from the collected data. It is the scope of data science.
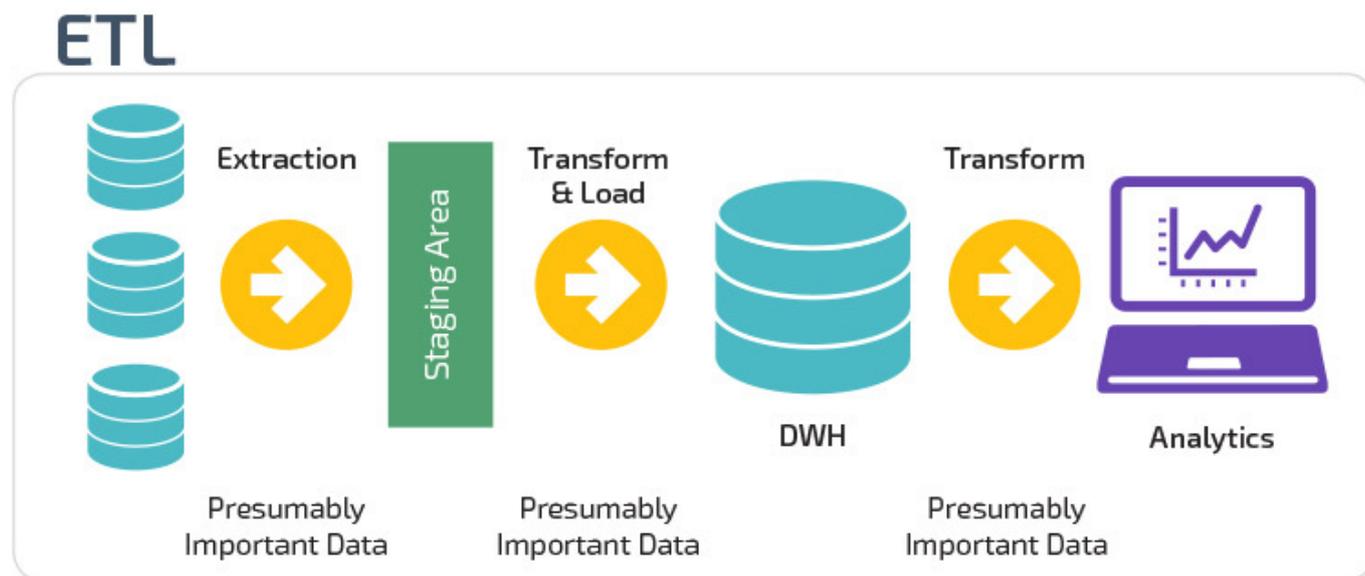
Software engineering is about the design, development, and maintenance of an application.

— Methodology

ETL is a well-known data science approach; the full form of ETL is extraction, transformation, and loading.

At first, we extract the data from various sources. After retrieval, we convert data into a format that is easier to understand.

The final task is to load it into a system to process the collected data to gain useful insights.

The foundation of software engineering is the software development lifecycle (SDLC). You can follow this SDLC link to know more about it.

— The way we approach

Data science is process oriented. We mainly deal with regular and logical things like algorithm, pattern recognition, crunch numbers, and so on.

Software engineering is all about framework/methodology oriented. The software engineers deal with a method like a waterfall model, agile model, spiral model, and so on.

We choose these models after analyzing the requirements of clients and projects.

— Growth and demand

As discussed earlier, the volume of data is increasing at a rapid pace. It has led to an increment in the demand of data professionals as well.

As per the report from various job portals, the need for data scientists rose by 29% each year since 2013. We can expect it to further increase in the future.

The demand for software engineers is expected to grow at a rate of 24% each year (Source).

Every system needs a software. Moreover, there is a massive

increase in the ownership of IoT devices. The corporations need software engineers to develop and maintain the software.

— Tools in use

There are a variety of tools available on the market. They make things easier for all types of professionals (both technical and non-technical).

Here, both data professionals and software engineers are technical workforces.

Source: DataCamp

The data professionals usually play around with a database, analytics, and data visualization tools.

They use these tools for extraction of data, mining data, analysis, and portraying the result of the study in various forms like graph, bar, chart, and so on.

Software engineers also need tools, but they differ from tools that data professionals use.

They require design and analysis tools, SCM tools, programming language tools, frameworks, web tools,

database tools, testing tools, integration tools, and so on to carry out various tasks in different phases of software development lifecycle (SDLC).

— Annual compensation

The payment package for both professions is higher than the national average. The average salary of a data engineer is around $91,000 per annum (Source).

According to Glassdoor, the average pay of a software engineer in the United States surpasses $100k, and it stands around $103,000 (Source).

— Platforms/Environments

The nature of frameworks depends on the type of works that we need to perform.

The frameworks and environments that are commonly in use in data science tasks are Hadoop, Flink, data warehouse, Map R, spark, and so on. These frameworks assist data professionals in data analytics, data visualization, and data mining purposes.

Software engineering demands a full range of frameworks, which assists software engineers in business planning, modeling, analysis, design, software maintenance, testing, reverse engineering, project management, and so on.

— Skills

The people who prefer working in the data science field must be proficient in logic, mathematics, data visualization, and communication.
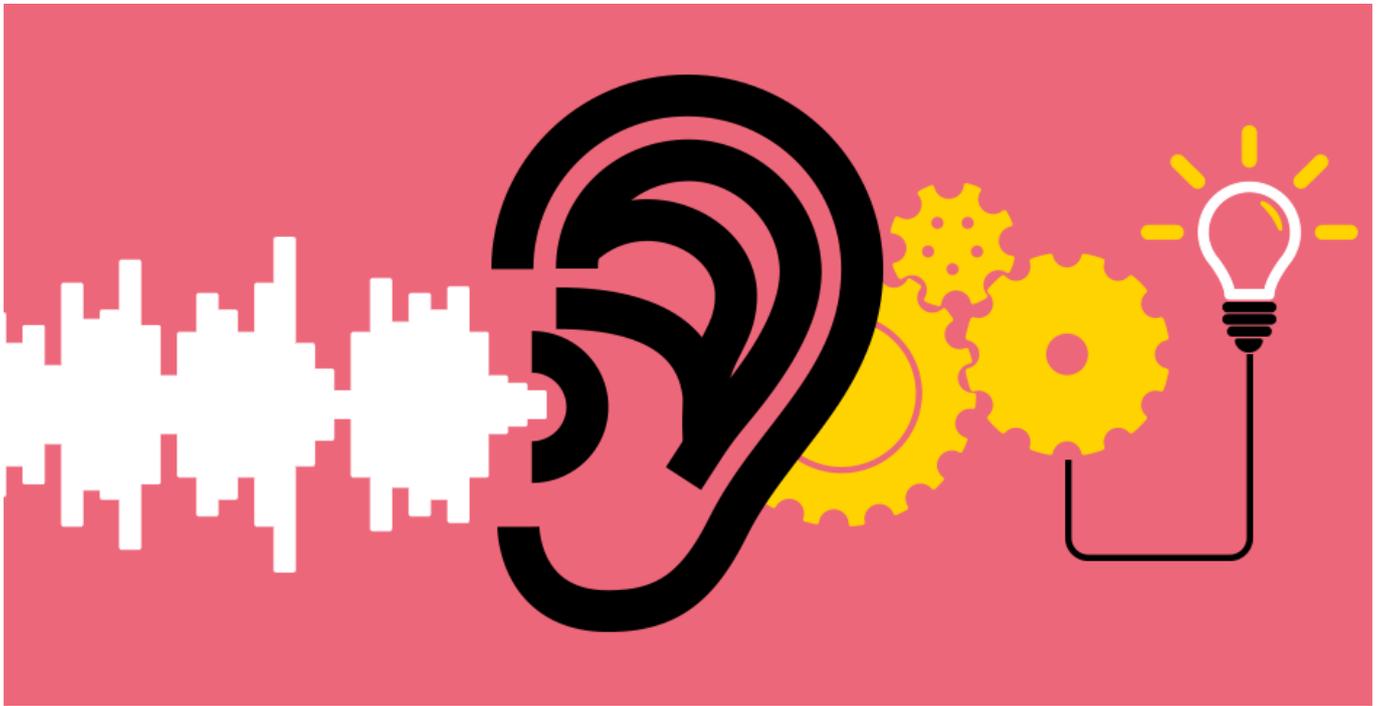
At first, data science professionals need to create data products and visualize it for making data understandable.

One needs domain knowledge, Big Data processing, machine learning, data mining, programming, mathematics, and statistic skills. With that said, a single professional does not need to know everything and use everything that I have mentioned in an instance.

On the other hand, software engineering field demands skills like programming skills in significant languages like C, Java, and so on, configuration tools like Chef, Puppet, testing, and building tools, build and release management tools.

— Differences in roles and responsibilities

There are different types of positions in both data science and software engineering field. Each of them has a different set of responsibilities.

Source: Linkedin

In the data science field, we will find roles like a data scientist, data engineer, Big Data specialist, data analyst, and business analyst. These professionals play around with data. Each position requires a specific set of skills.

In the software engineering field, we find positions like a designer, cloud consultant, administrator, tester, developer, administrators, product managers, and so on.

— Sources of Data

Both fields need data to fulfill their respective objectives. In data science, we collect data from a lot of sources.

Some of the sources of data for data science professionals are social media platforms, business apps, bank systems, sensor data, public data, machine log data, and so on.

Source: KGMoore

The data that we collect are often low in quality and unstructured. It is a job of data science professionals to filter and analyze the data to come up with insights that businesses could use to enhance their profit.

The software engineering professionals gather their data from the needs of end users, market demand of particular functionalities, new features development, and so on.

If software engineering suits your skills and interest, you can [learn to design and code](#) to get familiar with crucial things about the software development life cycle to kickstart your career.

On the other hand, you can start with a [data science certification](#) program that will help you understand the role of data science, important algorithms, data visualization and make you qualified to apply for data science jobs.

What's Your Take?

We have compared data science and software engineering

from various angles now. Both of them are appealing and have excellent career scope. However, each one requires different skill sets and have different roles in an organization.

Are there any differences that we have missed in this article. Do let us know by leaving your valuable comment below. We would also want to know about your choice and the reason behind choosing it.

Thanks for making it to the end

If you liked this article, i've a few practical reads for you. One about How to Learn Data Science and one about Machine Learning with Python.

I've also got this Data-Centric newsletter that you might be into. I send a tiny email once or twice every quarter with some useful resource I've found.

Don't worry, I hate spam as much as you. Feel free to subscribe.