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Top 16 Python Applications in Real-World

Have a look at diverse applications of Python we have in the real world



Claire D. Costa · Follow

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The joy of coding Python should be in seeing short, concise, readable classes that express a lot of action

in a small amount of clear code — not in reams of trivial code that bores the reader to death.

- Guido van Rossum

Over the past few years, the technology around us has had a major facelift in almost every key aspect. Living in a digital world, we're sure you must've realized by now that we're living in a world driven by software, where **a majority of modern facilities and services run on a piece of code**. The travel industry, banking, education, research, military, are just among the few major sectors today that depend on software to function properly.

It's a no-brainer that any software, be it from the past, present, or future is and will be written in a programming language. As of now, we have a long list of programming languages that keeps on getting longer as the months pass by.

One such programming language that had a critical impact on the modern world is Python, which we'll talk about here. The purpose behind this write-up is to get you up to speed on the diverse applications of Python we have in the real world.

Did You Know?

According to Stackoverflow, Python is the most preferred language which means that the majority of developers use python.

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10 Cool Python Project Ideas for Python Developers

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Real-world Applications of Python

Python has significantly evolved since its creation in 1991 by [Guido Van Rossum](#). In short, it's an interpreted, dynamic, and high-level programming language that facilitates building a plethora of apps. It's also fairly easy to get into, thanks to its lower learning curve and easy to read syntax.

Python is a programming language that does it all, from web applications to video-games, Data Science, Machine Learning, real-time applications to embedded applications, and so much more. In this section, we'll take a deeper dive into a broader list of applications of Python out in the wild.

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1. Web Development

We hope you're all familiar with what web development is. It's one of the most quintessential applications of Python. What makes Python one of the most popular

programming languages for web development is that Python comes with a wide array of frameworks and Content Management Systems(CMS) that exist to simplify a web developer's life. Popular examples of these web development frameworks include [Flask](#), [Django](#), [Pyramid](#), and [Bottle](#), while well-known Content Management Systems include [Django CMS](#), [Plone CMS](#), and [Wagtail](#).

Using Python for web development also offers several other benefits, such as security, easy scalability, and convenience in the development process. More so, Python comes with out-of-the-box support for various web protocols such as HTML, XML, frequently used e-mail protocols, FTP. Python also has one of the largest collections of libraries that not only enhance the functionality of web applications but also make it easier to do so.

10 Best Python Frameworks for Web Development In 2020

Last updated on by Claire D. Over the years, Python has become the preferred choice of programming language for...

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2. Game Development

In the previous pointer, we discussed how Python makes web development easier for developers. But, if Python can do web development, what's stopping it from being used in game development?

The answer is nothing!

Just like web development, Python comes equipped with an arsenal of tools and libraries for game development, and boy, would you believe if we said that Python was used to develop one of the most favorite shooters of the early 2000s, [Battlefield 2](#).

For those wondering, some of the many 2D and 3D game development libraries that make this possible are [PyGame](#), [Pycap](#), [Construct](#), [Panda3D](#), [PySoy](#), [PyOpenGL](#).

Python has also been used to develop several other modern popular titles such as Sims 4, World of Tanks, Civilization IV, and Eve Online, which heavily use Python for a majority of tasks. Mount & Blade, Doki Doki Literature Club, Frets on Fire, and Disney's Toontown Online are among the few other titles that use Python.

Learn Python by Building Five Games - Full Course



3. Artificial Intelligence and Machine Learning

Python is GitHub's second-most popular language and the most popular language for machine learning.

Artificial Intelligence and Machine Learning are undoubtedly among the hottest topics of this decade. These are the **brains behind the smart tech** that we so rely on today to help us make optimized decisions. Python, along with a handful of other programming languages, has seen a steep increase in their use for developing AI and ML-powered solutions.

Python's stability and security make it a perfect programming language for handling the intensive computations that keep the Artificial Intelligence and Machine Learning systems running. More so, Python's vast collection of libraries facilitate the development of models and algorithms that run modern AI and ML systems. Some of the popular libraries for the job are:

- SciPy for scientific and technical computing
- Pandas for data analysis and manipulation
- Keras for Artificial Neural Networks

- TensorFlow for Machine Learning tasks, especially Deep Neural Networks
- NumPy for complex mathematical functions and computation
- Scikit-Learn for working with various Machine Learning models

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4. Desktop GUI

Don't let the previous Python applications from our list give you an impression that Python is no good for desktop GUI programming. Of course, there are times when you can get away with a headless interface, but we know there are projects that must have a GUI, right? Well, for those projects, Python offers plenty of options to developers to build a fully functional GUI.

It goes without saying that **Python's comprehensible syntax and a modular programming approach** are key to creating super fast and responsive GUI while making the entire development process a breeze. Even though the list is quite long, some of the many tools available for GUI development using Python are [PyQt](#), [Tkinter](#), [Python GTK+](#), [wxWidgets](#), and [Kivy](#).

Python Top 5 GUI Frameworks



5. Image Processing

Due to the ever-increasing use of Machine Learning, Deep Learning, and Neural Networks, the role of image (pre)processing tools has also skyrocketed. To fulfill this demand, Python offers a host of libraries that simplify much of the initial preparatory tasks of a Data Scientist.

Some of the popular image processing Python libraries include [OpenCV](#), [Scikit-Image](#), and [Python Imaging Library\(PIL\)](#). Other examples of more common image processing applications that use Python are [GIMP](#), Corel PaintShop, [Blender](#), and Houdini.

6. Text Processing

Text Processing is among the most common uses of Python. For the uninitiated, Text Processing is very closely related to [Natural Language Processing](#) but let's not dive into NLP just yet. Text Processing allows you to handle enormous volumes of text while giving you the flexibility to structure it as you wish. If you're thinking about sorting lines, extracting text, reformatting paragraphs, and such, you're correct. What else can you do with Text Processing? Well, with Python's text processing capabilities, you can do a lot more than that.

7. Business Applications

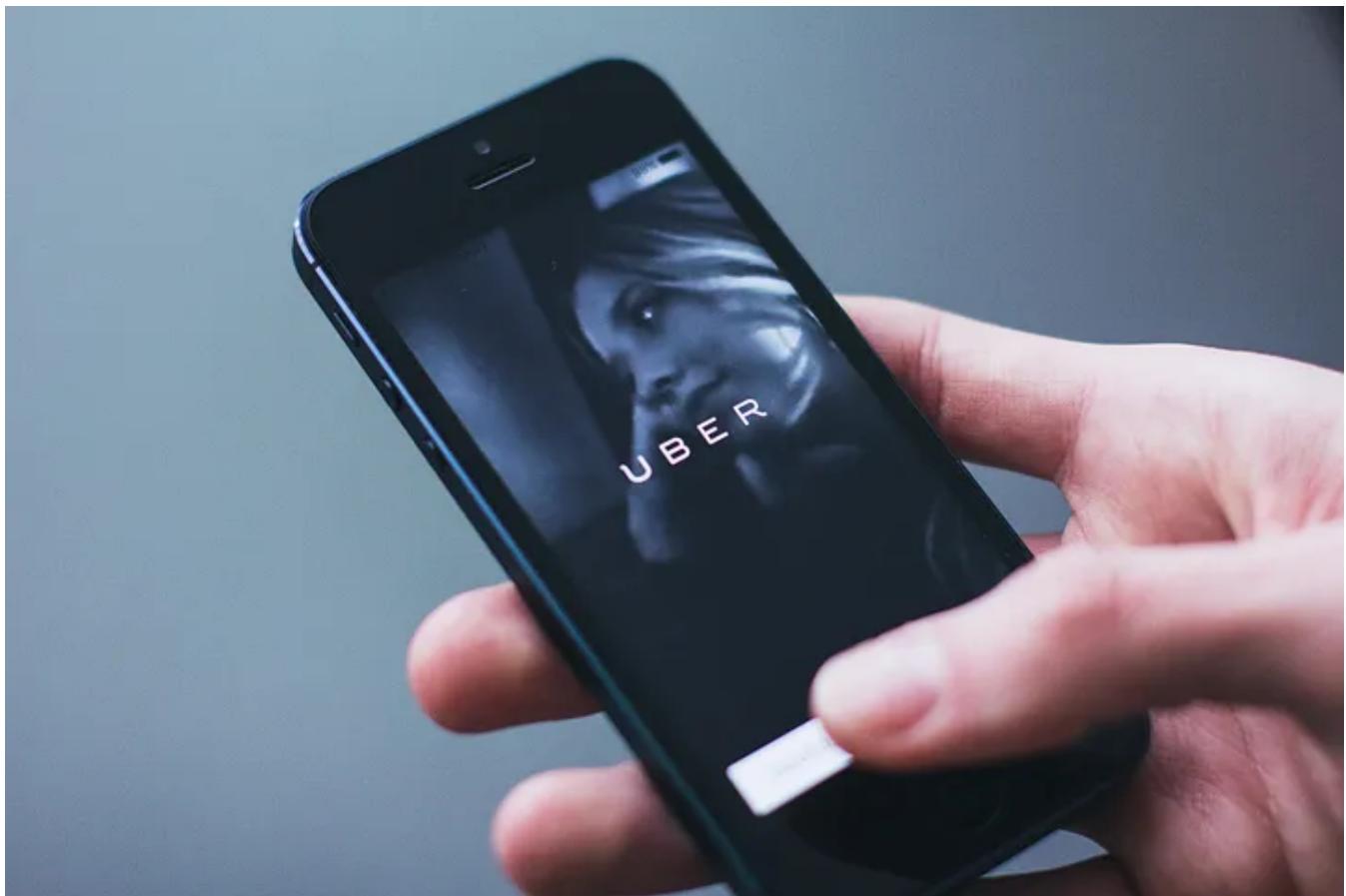


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Business applications differ vastly from your average consumer software in many ways. **First**, they offer a set of specific features instead of a myriad of features. **Second**, the user group they target is very tight-knit, usually an organization, unlike consumer applications, which are created with the general purpose in mind.

The best thing about Python is that it is perfect for delivering high-performance custom solutions, be it consumer applications or business applications, Python can do it all.

Odoo and Tryton are two powerful and modular business applications that are built using Python.

One of the most critical aspects of any application is its security. Although all applications are built to be secured, Python's security features will always be its prime highlight when it comes to business applications as they rely on information security. Another distinguishing feature of business applications is their scalability. A scalable application is essential to helping a business scale, which Python excels at.

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10 World-Class Companies Using Python

Python is actively being used by some of the giants in the IT world

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8. Education Programs and Training Programs

One of the best things about Python is that it makes for a perfect entry point for beginners looking for a way into the world of modern programming. The reason is simple, Python's syntax is fairly similar to conventional English, making it extremely easy to comprehend and work with. Compared to other programming languages, Python also has a shorter learning curve. This aspect of Python makes it one of the best candidates for educational programs all over the world.

A quick Google search for “online Python courses” would probably net you over tens of websites offering Python courses for various skill levels. Platforms like [Coursera](#), [edX](#), [Udemy](#), [Python Institute](#), and [Harvard](#) are among the top online providers of such educational courses, but there are other platforms too.

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9. Audio and Video Applications



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Audio and Video applications are also no stranger to Python's efficiency. When it comes to working with audio and video files, you'll find yourself fully equipped with tools and libraries to accomplish your task. Tasks such as basic **signal processing**, **creative audio manipulation**, **audio recognition**, and more can be easily handled by libraries like [Pyo](#), [pyAudioAnalysis](#), [Dejavu](#), and many other libraries like it.

As for the video part, Python offers several libraries, such as [Scikit-video](#), [OpenCV](#), and [SciPy](#), that can help you manipulate and prepare videos for use in other applications. Popular audio and video applications written in Python include big players like **Spotify**, **Netflix**, and **YouTube**. We hope this gives you an accurate representation of Python's capabilities when it comes to working with audio and video files.

10. Web Scraping Applications

The internet is home to an enormous amount of information ready to be utilized. What Web Scrapers essentially do is they crawl the websites they're directed towards and store all the collected information from their web pages in one place. From there onwards, this data could be used by researchers, analysts, individuals, organizations for a broad range of tasks.

With Python's simple code, building and using Web Scrapers becomes a lot easier. A few examples of the tools behind the Web Scrapers are [PythonRequest](#), [BeautifulSoup](#), [MechanicalSoup](#), [Selenium](#), and a handful more. Web Scrapers are being commonly used in price trackers, research and analysis, sentiment analysis in social media, Machine Learning projects, and probably every project in the real-world that benefits from a huge repository of data.

web scraping using python for beginners



11. Data Science and Data Visualization

Data plays a decisive role in the modern world. Why? Its because it is key to understanding the people and their taste in things around them by gathering and analyzing crucial insights about them. This is what the entire domain of Data Science revolves around. Data Science involves identifying the problem, data collection, data processing, data exploration, data analysis, and data visualization.

The Python ecosystem offers several libraries that can help you tackle your Data Science problems head-on. We have [TensorFlow](#), [PyTorch](#), [Pandas](#), [Scikit-Learn](#), [NumPy](#), [SciPy](#), and more libraries that specialize in creating and fine-tuning Deep Learning and Machine Learning models, performing intensive data crunching and data manipulation.

Data Visualization comes into play when you need to communicate your findings to the stakeholders and your team. Now, even for visualizations, there is no shortage of

libraries in the Python ecosystem. We have [Plotly](#), [Matplotlib](#), [Seaborn](#), [Ggplot](#), [Geoplotlib](#) as the most widely used data visualization tools.

Top Python Libraries for Data Science

An Overview Of Popular Python Libraries for Data Science

[towardsdatascience.com](https://towardsdatascience.com/top-python-libraries-for-data-science-101)

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12. Scientific and Numeric Applications

Remember we talked about a few scientific and numerical libraries for Python while covering Artificial Intelligence, [Machine Learning](#), and Data Science? Well, for projects that aren't specifically from the AI, ML, and DS spectrum but still require intensive computations in the form of linear algebra, high-level mathematical functions, and similar, Python is well equipped for them too.

Python's collection of scientific and numerical tools and libraries that include [Pandas](#), [IPython](#), [SciPy](#), [Numeric Python](#), [Matplotlib](#), and many other libraries like them, have helped scientists and researchers conclude countless number-crunching problems and uncover new findings. FreeCAD and Abaqus are some real-world examples of numerical and scientific applications built with Python.

Top 11 Github Repositories to Learn Python

Popular GitHub repositories for learning Python

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13. Software Development



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The scope of programming with Python is far greater than just web development, games development, scientific, or even embedded systems. There are various aspects of Python that make it perfect for software development of any kind. Python offers a host of features, such as **quick execution, high compatibility, strong community support, and an enormous collection of libraries**. Some of the software development tools built with Python are **Roundup, Buildbot, SCons, Mercurial, Orbiter, and Allura**.

But most importantly, Python's ability to work with evolving technologies like **Artificial Intelligence, Machine Learning, and Data Science** makes it a highly preferred programming language by a vast number of developers. Apart from being used as the primary programming language in projects, software developers also use Python as a support programming language for project management, build control, and testing.

Top 12 Python Developer Skills You Must Need to Know

Top skills that a Python developer must-have

towardsdatascience.com

14. Operating Systems

Operating systems are the brains of any computer. And Python is one of the many programming languages that's powering the Linux-based operating systems. Well, not exactly the operating system itself but parts of it.

Two popular instances of Python's application in the real world come from **Ubuntu's Ubiquity Installer** and **Red Hat Enterprise's Anaconda Installer**, both of them have been built using Python.

Similarly, **Gentoo Linux** and Google's Chrome OS' package management system **Portage** is also built with Python. It is a known fact that the combination of C and Python is highly advantageous in designing and developing operating systems.

Python Tutorial: OS Module - Use Underlying Operating System Functiona...



15. CAD Applications

Mostly used for product design by industries such as automotive, aerospace, architectural, and many more, **Computer-Aided Design(CAD) applications** allow product designers and engineers to design products with precisions right down to the millimeters.

Needless to say, Python has also conquered the domain of CAD with its highly popular and efficient offerings, such as **FreeCAD**, **Fandango**, **PythonCAD**, **Blender**,

and Vintech RCAM. These applications provide industry-standard features like macro recording, workbenches, robot simulation, sketcher, support for multi-format file import/export, technical drawing modules, and much more.

16. Embedded Applications

By far one of the most fascinating applications of Python is the ability to run on embedded hardware. For those new to this, embedded hardware is a tiny computer that's created to perform limited actions. An embedded application is what drives the hardware, aka the firmware. Popular examples of these applications include MicroPython, Zerynth, PyMite, and EmbeddedPython.

As of today, we have an exhaustive list of embedded devices because they're almost everywhere. For example, Digital Cameras, Smartphones, Raspberry Pis, and Industrial Robots are just some of the many devices that can be controlled with Python. FYI, not a lot of people know this, but Python can also be used as an abstraction layer in a device firmware while C/C++ handles the system level side of things.

Other Python Applications

- Console-based Applications
- Computer Vision
- Robotics
- Language Development
- Automated Testing
- Automation
- Data Analysis (The Hottest of Python Applications)

Conclusion

Python is an extremely robust and versatile programming language that is rapidly gaining popularity among developers from various sectors. Its ability to be deployed into virtually any domain is remarkable, thanks to its vast ecosystem of diverse libraries. In this write-up, we tried to showcase the top 16 applications of Python in the real-world.

If you're a beginner looking to pick up programming, we hope this article persuades you to choose Python as your first programming language. If you do end up picking Python, we've got you covered with a plethora of top Python books, MOOCs, GitHub repositories, and a collection of popular libraries and tools.

Note: To eliminate problems of different kinds, I want to alert you to the fact this article represent just my personal opinion I want to share, and you possess every right to disagree with it.

If you have more suggestions, I'd love to hear about them.

More Interesting Readings

I hope you've found this article useful! Below are some interesting readings hope you like them too-

Python Libraries for Natural Language Processing

An Overview Of popular python libraries for Natural Language Processing

[towardsdatascience.com](https://towardsdatascience.com/an-overview-of-popular-python-libraries-for-natural-language-processing-10f3a2a2a2)

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“How many data science projects have you completed so far?”

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About Author

Claire D. is a Content Crafter and Marketer at [Digitalogy](#)— a tech sourcing and custom matchmaking marketplace that connects people with pre-screened & top-notch developers and designers based on their specific needs across the globe.

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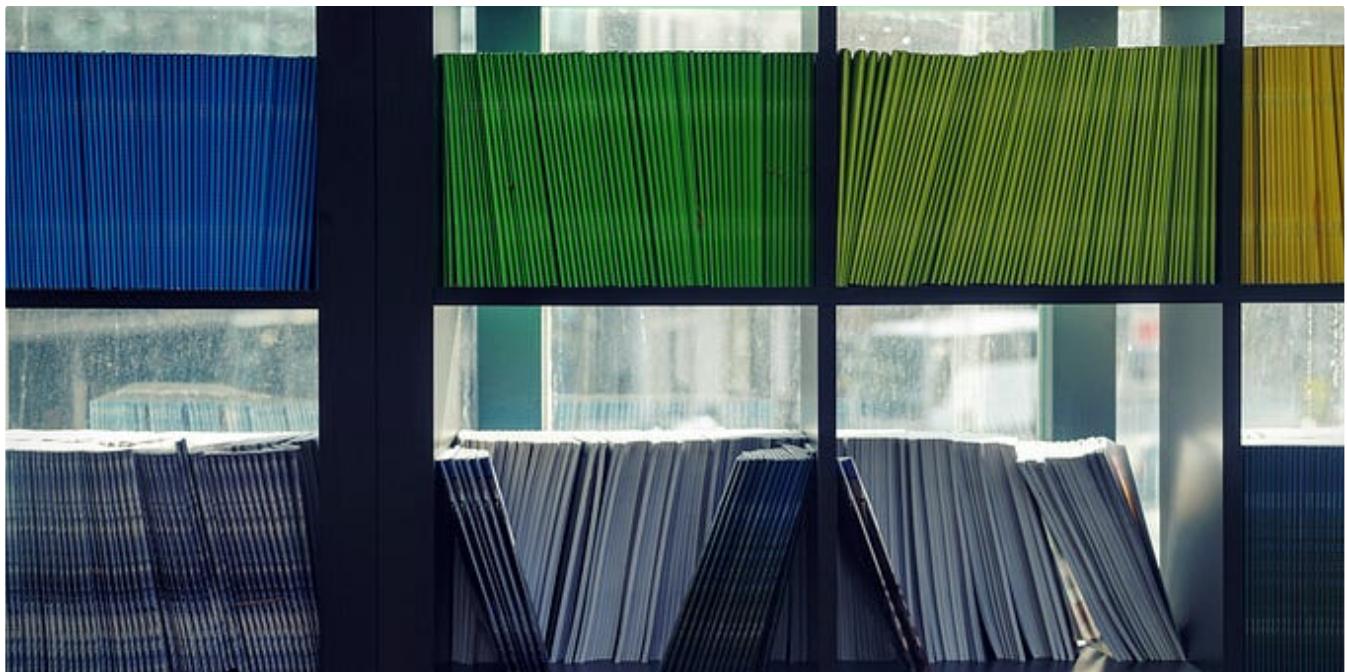
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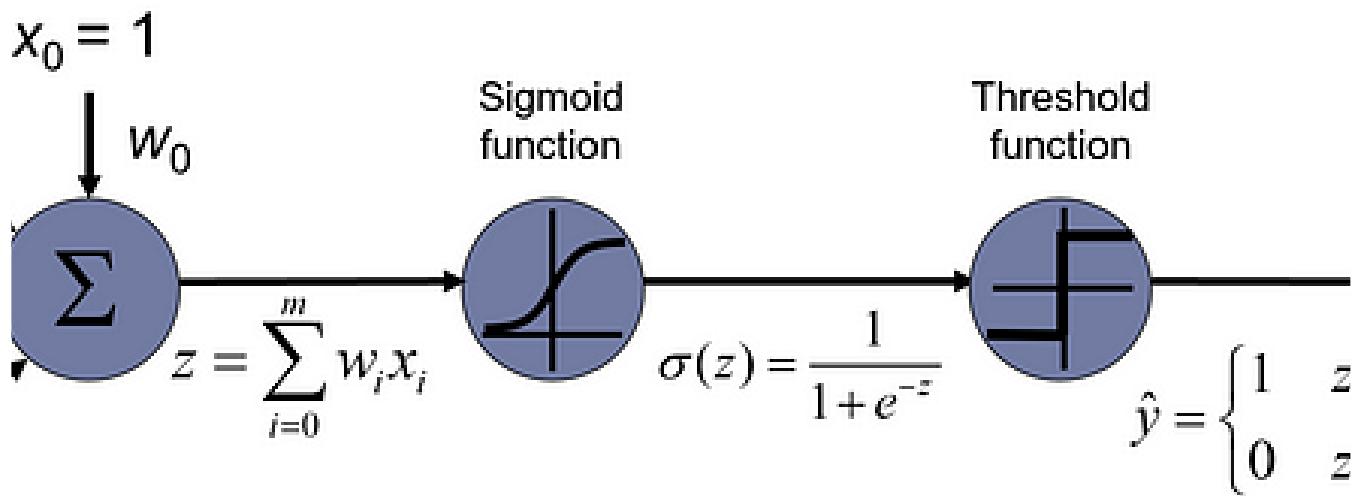
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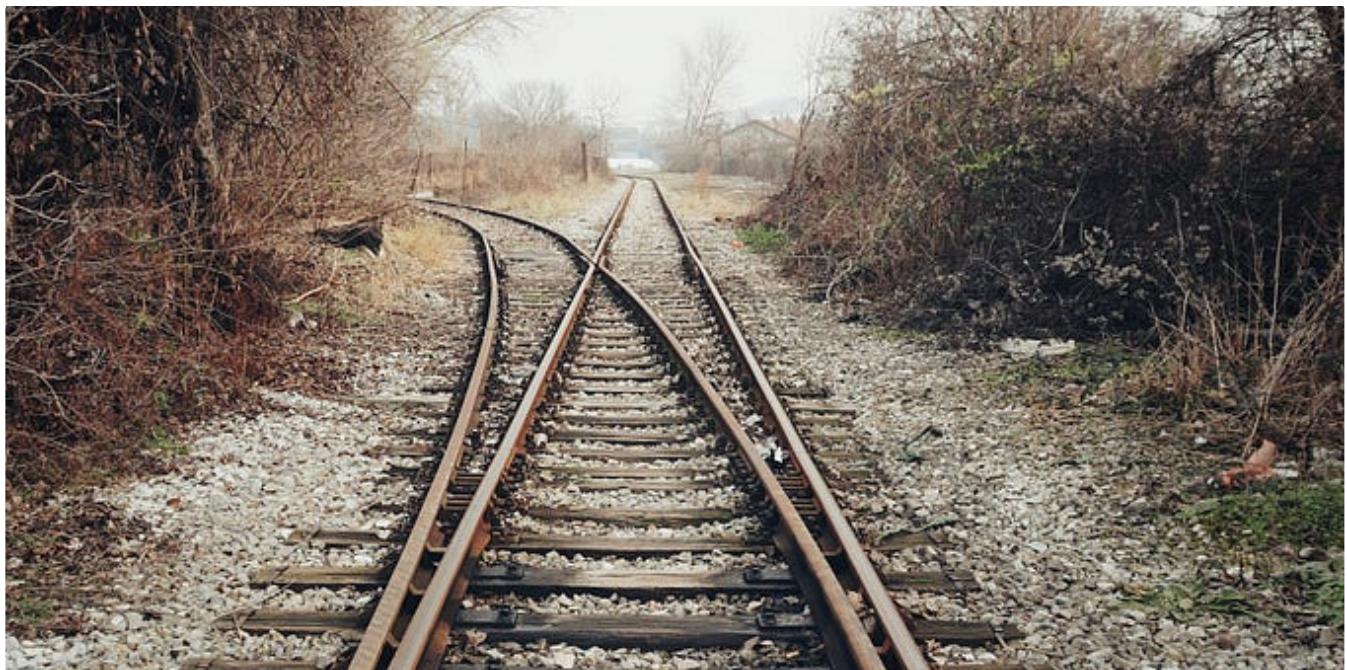
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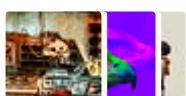


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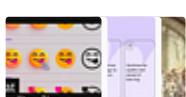
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