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Review on Software Technology

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Abstract: Software technology is the term employed to describe the assortment of instruments, approaches, and procedures used in the creation, upkeep, and deployment of software systems.
It covers a wide range of topics, including testing methods, software engineering principles, databases, frameworks, libraries, and programming languages.
Programming languages are one of the major components of software technology. Different programming languages provide varying degrees of functionality and abstraction, enabling programmers to construct code for certain goals. In addition to many others, popular programming languages include Java, Python, C++, and JavaScript.
These languages are always changing to accommodate brand-new features and improvements as well as adapt to shifting requirements.
Keywords: Software technology, databases, degree of functionality, platforms, languages.

I. INTRODUCTION

The way we work, live, and interact with the world around us has all changed as a result of software technology. It now plays a crucial role in our daily lives, powering everything from computers and cellphones to automobiles, buildings, and many businesses. Numerous industries have seen a revolution thanks to the quick improvements in software technology, which have led to greater productivity, automation, and creativity.
Software technology primarily refers to the instruments, methods, and procedures used in the creation, improvement, and upkeep of software systems. Programming languages, software engineering ideas, frameworks, databases, testing techniques, and deployment strategies are just a few of the many disciplines it embraces.

II. ELEMENTS OF SOFTWARE TECHNOLOGY

A. Reasoning

The goal of software technology is to automate procedures, improve efficiency, and streamline tasks. Manual and repetitive operations can be automated to save time and effort by creating software solutions. This results in higher production, lower costs, and better overall operational effectiveness. Organisations are able to develop and maintain market competitiveness thanks to software technology.
Businesses can launch fresh features, services, or products that set them apart from rivals by developing new software applications. Software innovation can result in better client experiences, higher levels of customer satisfaction, and a stronger position in the market.

B. Learning

Learn a programming language or several, such as Python, Java, C++, or JavaScript, to get started. Writing code that directs computers to carry out certain tasks using these languages serves as the cornerstone of software development. Learn about database technologies, including relational (like MySQL, PostgreSQL) and NoSQL (like MongoDB, Redis) databases. Discover effective database design, querying, and management techniques to store and retrieve data for software applications.

III. SUB-FIELD OF SOFTWARE TECHNOLOGY

Software technology is divided into many sub-fields that focus on various facets of software application and development. Several well-known sub-fields are:

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Fig. 1: Sub-fields of Software Technology

A. Machine Learning (ML) and Artificial Intelligence (AI)

This subfield focuses on creating software systems that are capable of carrying out tasks like natural language processing, computer vision, and decision-making that traditionally need human intelligence. Software can learn from data, identify patterns, and make predictions or recommendations thanks to AI and ML technology.

B. Data Science and Big Data

Using statistical analysis, machine learning, and data visualisation techniques, data scientists are able to glean knowledge and insights from vast amounts of data. Big Data technologies address the difficulties involved in handling, storing, and analysing enormous quantities, frequently necessitating parallel computing and distributed systems.

C. Cybersecurity

Protecting software systems and data from unauthorised access, threats, and flaws is the main goal of cybersecurity. This area of study entails creating safe software, putting encryption into practise, performing risk analyses, and creating strong security policies.

D. Web Development

Website and online application development is the main emphasis of web development. It covers back-end development (server-side programming, databases) for managing data processing and business logic as well as front-end development (HTML, CSS, JavaScript) for designing user interfaces.

E. Mobile Application Development

The development of software applications designed for mobile devices, such as smartphones and tablets, is the focus of the subfield known as "mobile application development." It entails creating intuitive user interfaces, maximising performance with constrained resources, and utilising platform-specific features and capabilities.

IV. DRAWBACK OF SOFTWARE TECHNOLOGY

Although software technology has significantly advanced and benefited society, there are some downsides as well. The following are some negative aspects of software technology:

A. Complexity and Learning Curve

Software technology can be extremely complicated, necessitating a steep learning curve for both users and developers. It can be difficult to master programming languages, frameworks, and tools, and it might take time to keep current on new developments.

B. Software Bugs and Vulnerabilities

Software technology is prone to flaws and errors. Software systems may have undetected flaws that might cause malfunctions or security breaches even after thorough testing and quality assurance procedures. These problems may jeopardise the confidentiality, availability, and integrity of data

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C. Maintenance and Upgrades

To solve bugs, security vulnerabilities, and compatibility concerns, software systems need constant maintenance, updates, and upgrades. Particularly for large-scale systems or systems with intricate dependencies, this process may need a lot of resources

D. Rapid Evolution of Software Technology

As software technology develops quickly, it may cause existing systems and skills to become obsolete. Continuous learning and adaptation are necessary to stay current with the newest trends and technologies.Refusing to adopt new technologies could lead to old systems that are insecure, inefficient, and unusable with current software ecosystems.

E. Ethical and Social Implications

The ethical and societal ramifications of software technology are complex. For instance, automation and AI technologies may result in employment losses and raise concerns about accountability, algorithmic bias, and privacy.

V. FUTURE SCOPE OF SOFTWARE TECHNOLOGY

Future software technology has a very broad application and has a lot of room for growth and innovation. The following are some crucial topics that show where software technology is headed in the future:.

A. Internet of Things (IoT)

The Internet of Things (IoT) will continue to grow, linking numerous devices and allowing for smooth communication and data exchange. Software technology will be critical in the development and management of IoT platforms, the development of intelligent applications

B. Cloud Computing

Cloud computing will continue to be a dominant force in software technology, delivering scalable infrastructure, on-demand resources, and a diverse set of services.

C. Data Analytics and Business Intelligence

With the exponential growth of data, the future of software technology will include advanced data analytics approaches such as predictive analytics, prescriptive analytics, and real-time analytics. More sophisticated tools for data visualisation, pattern identification, and decision support will be provided by software systems.

D. Cybersecurity and privacy

As technology evolves, the necessity for strong cybersecurity and privacy safeguards becomes increasingly important. To protect against increasing dangers, future software technology will focus on developing advanced encryption techniques, intrusion detection systems, and safe software development practises.

E. Blockchain and Distributed Ledger Technology (DLT)

Blockchain and distributed ledger technology (DLT) will continue to evolve, providing safe and transparent systems for transactions, data storage, and identity management. Innovative blockchain applications in fields such as supply chain management, decentralised banking, and digital identities will be investigated using software technology..

VI. LANGUAGES USED IN SOFTWARE TECHNOLOGY

Here are some regularly used programming languages in software technology:.

A. Python

Python is one of the most powerful and easy programming language that anyone can start to learn. It is a easy to learn and open to use language. Secondly, it is a platform independent language. It provides extensive framework for Deep learning, machine learning and Artificial Intelligence Python used for machine learning and natural language processing.

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B. Java

Java is also most widely used programming language which uses OOPs (i.e. Object Oriented Programming). Java is used by developers and programmers to develop machine learning situations and enterprise development. Java is also a platform independent language. Java is scalable programming language. Java allows virtual machine technology that allows to create single version of application and provide support to your business.

C. JavaScript

JavaScript is a scripting language that is largely used for web development. It is widely supported by web browsers and allows for interactive and dynamic online pages. For frontend development, JavaScript frameworks such as React, Angular, and Vue.js are commonly utilised.

D. SQL (Structured Query Language):

SQL (Structured Query Language) is a specialised language used to manage and manipulate relational databases. It is essential in numerous software applications for data storage, retrieval, and management. is a specialised programming language designed to manage and manipulate relational databases. It allows users to create, alter, and retrieve data from databases in a standardised manner. Here are some important SQL features:

E. PHP

PHP is a server-side programming language that is commonly used in web development. It's very good for creating dynamic websites and dealing with databases.

F. Julia

Julia is one of newer languages on the list and was created to focus on performance computing in scientific a technical field. Julia includes several features that directly apply to Artificial Intelligence programming. Julia comparatively new language, which is mainly suited for numerical analysis and computational science. It contains several features that can be very helpful in Artificial Intelligence programming.

G. C++

C++ language has been present for so long around, but still being a top and popular programming language among developers it provides better handling for Artificial Intelligence model while developing. Although C++ may not be the first choice of developer for Artificial Intelligence programming various machine learning and deep learning libraries and written in the C++ language.

H. Swift

Swift is an Apple programming language designed for iOS, macOS, watchOS, and tvOS development. It is intended to be secure, fast, and expressive, and it is popular among iOS app developers.

I. Kotlin

Kotlin is a contemporary programming language that runs on the Java Virtual Machine (JVM). It is mostly used for Android app development and provides more functionality and syntactical improvements than Java.

VII. CONCLUSION

The conclusion of software technology is that it continues to play an important role in moulding numerous elements of our lives and industries in our current world. Software has transformed the way we communicate, work, enjoy ourselves, and tackle complex problems.

Rapid advancements and new solutions fuel the continual evolution of software technology. To improve software development processes and build more efficient and user-friendly apps, new programming languages, frameworks, and tools are developed.

Healthcare, banking, transportation, education, and entertainment have all been altered by software technology. It has increased efficiency, accuracy, and accessibility, which has resulted in better services, better decision-making, and higher production.

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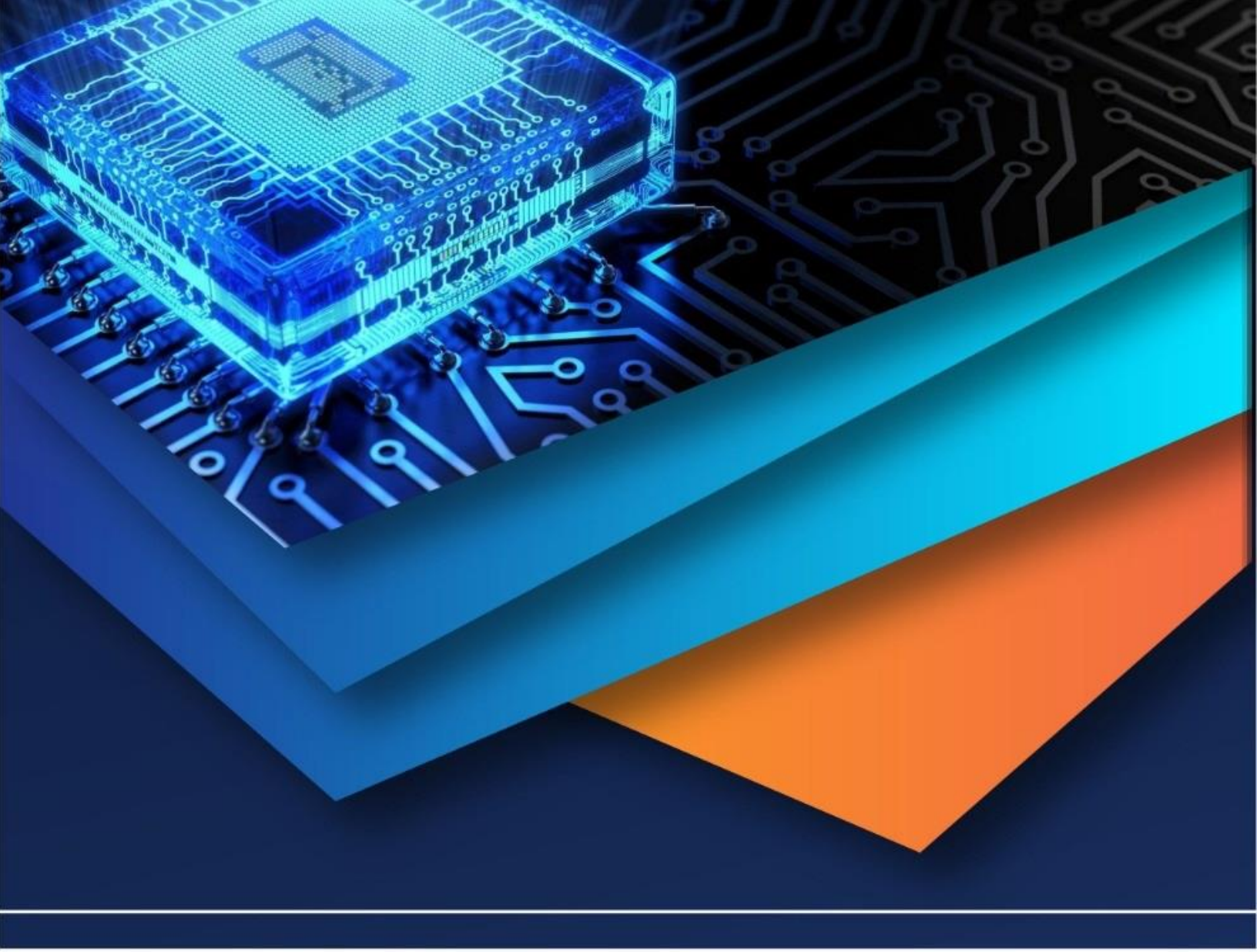
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