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THE LANGUAGE OF SCIENCE: A LEXICAL STUDY OF ACADEMIC WRITING IN COMPUTER SCIENCE

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ABSTRACT: *Language is a veritable tool for conveying knowledge and information. In the field of science and technology, it is indispensable in disseminating, concepts and facts. Ideas and novel thoughts cannot be formulated without the use of languages in the sciences. Thus, language is the means of understanding science and technology. In fact, language and science are so inextricably linked that learning science is analogous to studying language. However, some second language learners of English fail to realize the relevance of language in the study of science and technology. Also scientific language expressing technical facts pose a lot of problems to second language learners in the field of computer science because the texts introduce the learners to many unfamiliar words. Therefore, this study examines and interprets some technical words in the field of computer science and shows its peculiar usage in the academic context. Excerpts culled from academic journals and texts in computer science are analyzed to explore some ordinary and technical words with specialized meanings. It is discovered that there is a significant number of technical jargons in computer science texts. A major implication of this study is that the second language learners of computer science need to understand and interpret the technical words for their studies and skills in professional communication.*

KEYWORDS: Language, Lexical Study, Academic Writing, Computer Science

INTRODUCTION

Human perceptions and ideas are communicated more effectively through the use of language. In all fields of human endeavours, the use of language is exigent in the formation of ideas and views. Therefore, Nwaozuzu (1992:28) posits that through the use of language, reality is grasped, conceptualized and transmitted from one generation to another". Also, language is the medium of science, literature, arts, technology, engineering, computer science and in other fields. Many scholars postulate on the concept of language, language use and language development.

Anyanwu (2002:126) asserts that language is 'a system composed of symbols, signs, and vocal acts arbitrarily and conventionally used in communications'. Nwaozuzu (1992:29) stresses that language is an active agent in the formulation, modification and supplementation of external perceptions. Brown and Yule (1983:2) observe that the acquisition of written language has permitted the development of cultures of philosophy, science, literature and the development of cultures of philosophy, science, literature and the development is made possible by the ability to transfer information through the use of language. Similarly, Denham and Lobeck (2013:17) remark that the scientific study of language contributes to our understanding of anthropology sociology, computer science, speech pathology, communication, journalism history and political science. On

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this note, language makes it possible for its users to express novel ideas and concepts in all spheres of human endeavours.

In the field of science, language is so pivotal that scientists employ to convey ideas which are informative and scientific. Ford and Peat (1988:2) state that one of the major objectives of scientific writing is to convey scientific knowledge to the reader in a distinct and economical way. Crystal (1995:380) remarks that the main birthplace for new words is in the field of science. While agreeing with these ideas, Wellington and Osborne (2002:2) observe that learning the language of science plays a fundamental role in acquiring scientific knowledge and skills. Also the source posits that learning science is similar to learning language. Therefore, language is very critical and of great relevance in the study of science. However, some second language learners of the English language surprisingly see language as being marginally relevant to the study of science. They regard language as merely playing a passive role in science. Examining the role of language in science, Ford and Peat (1988:2) assert that "an attempt to express new scientific ideas is a matter of using the right words". Also, the source believes that language plays an active role in the same way scientists communicate ideas and develop them. On this premise, one can assert that poor language use in the field of science leads to blocks in scientific writing and development of ideas. Language plays a crucial role in the acquisition of concepts, knowledge and the development of ideas in science.

Language is utmost importance for proper comprehension of ideas in the sciences. Herwit-Bradshaw (2012:2) affirms that learners use language to interpret and create ways of representing scientific activities and knowledge. Hence Herwit-Bradshew (2012:61) posits: that:

> The successful teaching of the sciences cannot be a accomplished without the consideration of language and literacy teaching since language processes are intrinsically linked to the nature and fabric of these disciplines.

The writer points out the need to provide students with greater opportunities to develop their critical language skills in content areas in the sciences since there is an inextricable link between science and language. Corroborating this fact, Halliday and Martin (1993:4) stress that creating a technical term is itself a grammatical process and social features of language make the theoretical discourse in the science possible. Language used in the science not only describes human experience but also interprets and construes it. (Halliday and Martin,1993:4). Thus, Halliday and Martin (1993:4) call a scientific theory "a linguistic construal of experience".

In view of these notions, language is central to the proper description of concepts and ideas in the sciences and any scholar learning science must have a firm grip of the language used in presenting scientific ideas Wellington and Osborne (2001:5) state that learning science is like learning a new language in many ways. In some ways, it presents more difficulty in that many of the hard conceptual words of science have precise meaning in science and sometimes an exact definition but a very different meaning in everyday life. (Osborne and Wellington (2001:5). In the field of computer science, new words have been coined to express new concepts and inventions. Sometimes the vocabulary appears highly technical and difficult to understand in the second language situation. The words pose a lot of problems to second language learners.

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In computer science texts, a vast vocabulary expressing technicalities and ideas exists. Some are familiar words with specialized meanings while some are hard conceptual words with also specialized meanings. Thus, some learners of English do not show a thorough comprehension of the technical words. This study therefore examines and interprets the familiar and unfamiliar words with specialized meanings in computer science. It also highlights their usage in professional contexts.

The Language of Science and Technology

Thirumalai (2003:21) observes that steady lexical expansion and lexical changes characterize the language of science. Furthermore, the use of language in the sciences is formal and the terms used in scientific writing are precise, quantitative and operationally definable. In the same vein, Munteanu (2011:8) posits that the language of science is viewed in the context of professional communication. Thus, Munteanu (2011:8) asserts that studying professional communication and its genres is motivated by two factors which are:

- The fact that written disciplinary communication is meant to facilitate social interaction and the production of knowledge.
- The fact that the production of knowledge is codified in generic forms

Thus, an empirical study of the lexis, form and structure of scientific writing will lead to proper understanding of the concepts in the science. Furthermore, Strucnkyte and Jurkunaite (2008:4) agree that the knowledge of the lexical items of scientific genre helps to understand and create text with greater ease. Therefore, the knowledge and explanation of technical terms are of utmost importance in understanding scientific texts. Hence, Crystal (1995:380) maintains that the main distinctive feature of scientific language is the lexical items and compound abbreviations that require explanations. Crystal (1995:380) asserts those scientific sentences are known for complex internal structures whose complexity is due to the frequent use of noun phrases. While agreeing with other linguists, that the language of science is replete with technical jargons, Okoye and Chibuoke (2010:268) observe that scientists make use of everyday words that acquire new meaning potentials in their various contexts. Okoye and Chibuoke (2010:268) contend that the 'innovative nature of science makes the continual updating and naming of new concepts and discoveries an essential task'. In the same vein, science evolves through technological innovations, and the use of language is central in capturing novel thoughts. So, learners must capture the use of language needed in presenting scientific ideas Thus, Ford and Peat (1988:3) posits that science sometimes runs into obstacles and turns around in circles. The origin of these blocks may partially lie in language (Ford and Peat, 1988:3). On this premise, it is exigent that the language use in the sciences especially computer science be examined and the lexis that pose problems be explored. Furthermore, Strevens (1997:153) explains that scientific discourse is different from other kinds of discourse in terms of style, intention, the purpose behind the selection and use of language, Strevens (1997:153) states that the scientific discourse employs roots and affixes of Greek and Latin origin, as well as symbols, numbers and names which are mostly international in character. Explaining the language of science further, Strevens (1997:153) stresses that scientists use the same system of pronunciation, the same common grammar, rules of spelling and orthography and a lot of common non-specialized vocabulary though familiar words are used in specialized ways.

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Examining the concepts of language and technology, Shortis (2000:2) asserts that technology influences language. The writer posits that since technology is a means to extend man's reach, it is necessarily connected to language. This is because language and technology are the hub of human activity in the contemporary society. Therefore, Language is indispensable in disseminating technological development and ideas. Thus, it is the medium through which vital concepts and ideas in technology are communicated.

Furthermore, since technology is the application of scientific knowledge for practical purposes, the use of language becomes imperative in conveying scientific knowledge. So, language and technology are inter-twined for man's common good (Shortis, 2000:4). We use language to communicate technological inventions and ideas. Technology is made manifest and developed through the use of language; hence the use of language and technology are inseparable for the purposes of human development. So learners must be proficient in the use of language in order to excel in the sciences. Similarly, new words have been coined to capture technological inventions and some of the new words have become universally understood and officially entered the English lexicology (https://driverweb) design au /…../how tech has changed our language).

Furthermore, some words have taken on a whole new meaning due to modern technology. Technology has been responsible for a lot of new words. The introduction of technological equipment has brought about the coinage of new words and expressions. Similarly, language is used for promoting new ideas in technology and for making necessary changes. Thus, language is crucial for all activities in science and technology.

METHODOLOGY

The corpus for the study comprised forty texts from textbooks and journals in the field of computer science. The researcher selected the forty texts randomly and analyzed the corpus for both familiar and unfamiliar lexical items with specialized meanings.

The study employed the systematic functional linguistics theory by M.A.K. Halliday to examine the lexical items in the academic writing of computer science. Language should be studied in contexts such as professional settings and settings in language texts. Chappell (1988:1) states that the systemic functional theory views language as a social semiotic, a resource people use to accomplish their purpose by expression of meaning in contexts.

Thus, Chappell, (1998:1) states that systemic functional theory is based on the view that language is a system for making meaning, systemic refers to the fact that when we use language, we make choices from sets of available options. Functional assumes that every time we make a choice from the available option we are doing so in order to fulfill a communicative purpose.

In SFL, language has three meta functions which are ideational, interpersonal and textual. Mathiesen and Halliday (1997:7) remark that the 'ideational metafunction is concerned with 'ideation', the grammatical resources for construing our experience of the world around us and inside us. Furthermore, the writers posit that the interpersonal metafunction is concerned with the interaction between the speaker and addressee… the grammatical resource for enacting social roles

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in general, and speech roles in particular, in dialogic interaction, that is, for establishing changing and maintaining interpersonal relationship. Thus, the source asserts that we construe the natural world in the ideation mode and to enact the social world in the interpersonal made.

The textual metafunction is concerned with the creation of text with the presentation of ideational and interpersonal meaning as information that can be shared by the speaker and listener in text unfolding in context (Mathiessen and Halliday, 1997:8)

The three metafunctions are directly relevant to the present study because it examines how language is used in academic writing and the professional settings in the field of computer science. The study also articulates how words are sued to express different, concepts, ideas, events and technological innovations in computer science.

Analysis of the Technical Words

In the corpus, a lot of technical words was used by writers: the ordinary words with technical meaning and the hard conceptual words

Table 1: Ordinary words and their meanings

S/N	Ordinary words	Specialized meaning
1	Worms	A Programme which spreads over a network reproducing itself as it goes.
2	Viruses	A damaging computer programme designed to infect a computer.
3	Vulnerability	A flaw in the system security procedures, design or implementation.
4	Jerusalem	A virus that affects files and increases the size of the infected file by 1813 bytes
5	Trojan Horse	A type of computer virus
6	Zombie Armies	A type of malicious software
7	Malicious software	Any programme that acts without a user's knowledge and deliberately alters the computer operations
8	Lion	An internet worm
9	Integrity	The assurance that data cannot be created, changed or deleted without proper authorization
10	Slave	A remote secondary computer that is controlled by a central computer
11	master	A general purpose processor that performs imput/output tasks as well as computation
12	Fault tolerance	The ability a multiprocessor has to withstand equipment failure.
13	signature	An authentication code, such as a password which gives a user access to a system.

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14	Finger service	Helps one to get information about another person who is an internet user.
15	Cyber warfare	Cyber-battles
16	Cyber attacks	Emerging attacks on co-oporate information system
17	Advice	Methods that are activated when precise join points are reached.
18	Weaving	The process of composing different functional modules and aspects according the specifics given
19	Pascal Pascaline	A programming language The first mechanical calculator built by Blaise Pascal
20	Love letter	A type of virus
21	Confidentiality	The assurance that information is shared only among authorized persons or organization.
22	Cyber terrorists	Internet criminals who have the capacity to assault other people's systems with malicious intents to steal personal files or wipe out the content of hard disks
23	Cyber criminals	Internet criminals who have the capacity to assault other people's systems with malicious intents to steal personal files or wipe out the content of hard disks
24	Internet thugs	Internet criminals who have the capacity to assault other people's systems with malicious intents to steal personal files or wipe out the content of hard disks
25	File	An electronic document or an application or programme that has been named and is stored on computer
26	Hardware	The mechanic or electronic devices of a computer which one can touch and feel like monitors, keyboards, printer disk etc.
27	Software	The name given to a computer programme
28	Monitor	Another word for describing the visual display unit of the computer
29	Cookies	Small bits of textual information a web set sends to web browsers to be stored within the client machine and returned unchanged in subsequent visits to the site
30	Windows	A microcomputer operating environment
31	Window	A method of displaying a document so that many o its elements appear graphically
32	thread	A computer programme that consists of many independent smaller sections or beads
33	Query language	A language in database management that allows a database to be searched and queried easily
34	Object language	The language of a programme after it has been translated

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35	Programme	Software designed for a certain use such as word, processing. Electronic mail or spreadsheet entries and sometimes called an application
36	Wizards	Automated helpers that walk the user through the process of creating documents
37	Ada	A programming language
38	Napier's bones	A set of rods used for multplicaiton aids
39	Jacquard loom	A machine
40	Boolean algebra	An algebraic
41	Harvard mark	Authmomatic sequence- controlled calculcator
42	Colossus	A value base machine
43	Enigma	A top-secret German code
44	Atlas	A second generation machine
45	Formular translation(FORTRAN)	High-level languages
46	Terminals:	They are used to access the mainframe computer
47	Protocols	The method the computer use to communicate with one another
48	Pseudo-code	The English language used in computer program with
49	Flow chart	Series of instruction enclosed in different shaped symbols/boxes
50	Apple works	Types of computer programme
51	Sorting	The ability to arrange records in different ways
52	Professional file	A type of advanced programme
53	Capability	A formal description of the functionality
54	Cyber crime	Unlawful acts wherein the computer is either a tool or target
55	Cyber-security	Protecting information by preventing detecting and responding to attack through various mechanisms
56	Zombie computer	Computers dedicated for fraud or system used by 419 crooks to do illegal activities
57	Boot	The process of starting a computer
58	Tabulators	Devices used for semi-automatic selection and sorting of cards
59	Flip-flops	Simple transistor circuits
60	Bistables	Simple transistor circuits

Others are ethno-computing, authentication, trapdoors, query, drone armies, malicious software, footprint, slave computer, cloud, mouse, and so on

Table 1 shows that Computer Scientists employ familiar words to describe various concepts. The scientists use ordinary words with specialized meaning in their writing. From the excerpts, the researcher discovered the use of semantic shifts, blends, eponyms, coining/neologisms and synonyms. Thus the innovative nature of science and technology gave room for naming new

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concepts and discoveries. To capture the technological innovations and novel thoughts in Computer Science, the writers resorted to the use of everyday words with speiclaized meanings. Typical examples are found in the corpus.

Semantic Shifts from the excerpts:

1. When a slave fails, some computing capabilities are lost but the system can still function. If the master fails, catastrophe has struck the system and the system cannot perform.
2. A monitor has a way of closing up a data structure and the operations on it, so that the components of the structure can only be accessed with the procedures that define the operations on it.
3. Jerusalem affects com and EXE files and consequently increases the size of the infected files by 1813 bytes. This is why the virus is also called (1813) .
4. Business applications are moving to the clouds. The cloud is often characterized by self service interfaces that let customers acquire resources when needed as long as needed.
5. Netscape introduced Cookies in 1994, aiming to solve the state retention problem through headers to be carried over HTTP.
6. Multi processor operating system has the ability of withstanding fault tolerance.
7. The concept of digital signature is not a new phenomenon.
8. Finger service helps us to get information about another person who is an internet user.
9. When we look at few statistics on cyber warfare, one would ponder of the ascendance of information technology is a blessing or a curse.
10. In addition, an internet worm named 'Lion' is infecting computers and installing distributed denial of service (DDOS) tools on various systems.
11. Botrets or as the media calls them, Zombie Armies or Drone Armies have grown over the years into a multi-million older criminal economy which now constitute huge risk to government, critical infrastructure, industry, civil service and to the broader internet community .
12. Symantec software blocked 5.5 billion malicious web attacks in 2012 alone, 315 mobile device vulnerabilities were discovered in 2011.
13. The major US Government agencies reported an average of 10milion cyber-attacks per day.
14. Integrity is the assurance that data cannot be created, changed or detected without proper authorization such as would compromise the confidence placed in such valuable asset.
15. Advice are methods that are activated when join points are reached.
16. Weaving is the process of composing different functional modules and aspects according to the specification given.
17. This tends to look like a programme code especially the code of a Pascal programme.
18. Among these dangers are viruses erasing computer documents and attacking someone's computers.
19. The prototypical worm is released in 1988 by Robert T. Morns, a student at Cornell University.
20. An early virus called love letter was released in 2000 inducing people to open its attachment, a visual basic script.
21. A cracker-progrmme that searches out other programme and infects them by embedding a copy of itself in them making them Trojan horses.

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These examples found in the corpus are cases of semantic shifts. The specialized meaning extended the range of applications of the words underlined: 'advice', 'mouse', 'monitor', 'Jerusalem', 'slave', 'master', 'signature', 'finger service' , cyber warfare', 'Zombie Armies', vulnerabilities', 'weaving', 'worn', 'love letter', 'integrity'.

These words have taken on new meanings by extending their scope of reference. Hence Finegan (2012:57) calls this semantic shift 'metaphorical 'extension. The writer, further, posits that the phenomenon creates metaphors. So ordinary words have specialized meaning in the field of Computer Science.

Eponyms

Eponyms are created from names of inventors or famous people. The researcher discovered what Computer Science English employed a lot of eponyms by creating new words from names of famous people in the field of Computer Science.

Typical examples found in the corpus are:

1. In 1917, Napier devised as set of rods for use as multiplication aids. The rods were carved from bone and often called Napier's bones .
2. The French mathematician Blaise Pascal deviced the first true calculating machine. Pascal's contribution to computing was given a mark of recognition in the late 1960's when Niklaus Wirth of Zurich named his new programming language 'Pascal'.
3. Pascal had already devised a method of number complements for use in subtraction .
4. The machine called 'Jacquard Loom' was programmed by means of special punched cards which stored information about the required information in the cloth. In the Jacquard loom, each warp could be raised by an individual unless a sprung pin deflected the hook.
5. Lady Ada Lovelace, an amateur mathematician and friend of Babbage produced supporting material for the analytic engine in the form of programs and explanatory documents. Lady lovelace was the first programmer. The programming language 'Ada' was has been named after her.
6. Georg Boole, an English logician deviced an algebraic system now called 'Boolean algebra. for representing and manipulating logical expressions.
7. Even the word 'algorithm' was derived from the name of the noted Persian mathematician Mohammed Ibn-Musa al-Khwarizini (770-840 A.D).
8. In addition, there is a system design phase where the various modules of the system are identified and during the object design phase, the algorithms are designed.
9. Another example is the calculator called HAVARD MARK I. This is the automatic sequence-controlled calculator (ASCC) The ASCC is a fully automatic electrically driven machine. Its development was started at Harvard University, USA
10. Considered the first mechanical calculation, the Pascaline could handle numbers up to 999,999.99.

It is discovered that eponyms can also come from brand names as in the case of sentence '9' the calculator is named after the place where it was developed, the Harvard University. Hence Den ham and Lobeck (2013:199) posit that some brand names eponyms are recognizable but many are so integrated into the language that we aren't aware they were ever brand names at all.

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Blending

Examples

1. These are groups of attackers responsible for the creation of malicious software that infects and destroys information systems. Malware is malicious software deliberately created and specifically designed to damage, disrupt or destroy network services, computer data and software.
2. The first of the high-level language called FORTRAN (formular Translation was released in 1955.
3. Internet users are meant to observe some rules or what is called netiquette.
4. An internet e-mail address is made up of: (a) the user name (b) the domain name.
5. Botnets or as media called them Zombie Armies of Drone armies
6. An academic research blog is discourse that is disseminated through networked computers

And therefore belong to the domain of computer mediated communication (CMC)

Fortran	-	Formular translation
Malware	-	malicious software
Internet	-	international network
Netiquette	-	network and etiquette
E-mail-electronic	-	mail
Botnet	-	Robot network
blog	-	web log
info-tech	-	information and technology

These blends are discovered in the corpus examined.

Synonyms

Examples from the excerpt

1. Storage compaction can be referred to as Burping. It can also be called Garbage collection.

2. According to ITU, Botrets or as the media calls them Zombie Armies or 'Drone armies and their associated malware have grown over the years into a multimillion dollar criminal economy.

3. When we look at cyber warfare one would ponder if the ascendance of information technology is a blessing or course.

4. The major government defence agencies reported and average of 10million cyber-attacks per day.

Zombie armies
Drone armies
} synonyms

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Cyber-warfare
Cyber-attacks } synonyms

Storage compaction
Burping
Garbage collection } synonyms

Cyber-terrorists
Cyber-criminals
Internet-thugs } synonyms

Coining/Neologisms

Coining and neologisms are also present in the corpus. This coining, however, is peculiar to very technical words. The coining/neologisms apply to new inventions or concepts, thus, according to Denham and Lobeck (2013:197,) the word neologism means new word. The writers assert that true coining is rather rare relative to the vast number created by means of other word formation processes.

The coining found in the corpus are 'google', 'Xerox' and 'tweet browser'.

Example

Many speech applications require natural language access to large executed on powerful remote servers rather than on VXML browsers on end-user devises.

Table 2

Hard conceptual words of Computer Science found in the corpus

S/N	Words	Meaning
1	Algorithm	A set of well defined rules or procedures to be followed in order to obtain a solution to a problem .
2	Cipher/Cypher	A system of transforming a message into an unreadable form with a secret code or key
3	Encryption	A method of protecting access to files with a password
4	Decryption	The process of converting an encrypted data into its original form
5	Cryptography	The discipline of keeping and selectively sharing secrets which is a key component of digital rights management systems
6	Identify spoofing	Originally a common e-mail trick in which someone uses somebody else's e-mail to send a message. Today it is a process whereby criminals fool a user into thinking that one is clicking a safe link .
7	Botnets	A type of malicious software
8	Virtual memory	An imaginary set of locations or addresses where one can store data

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9	Interface	An information inter-change path which allows part of a computer like printers, monitors or moderns or two or more computers to communicate or interact
10	telnet	A programe that allows the user to log into other computers elsewhere on the internet
11	Usenet	A public discussion group that forms the internet's biggest information exchange the speed of access to the internet
12	Bandwith	The speed of access to the internet
13	Swapping	Saving a programme or part of a programme that is running in memory temporary into an area of a disk
14	encapsulation	The process of transmitting one network protocol within another
15	Byte	An element of data which is composed of eight data bits plus a parity bits and represents either one alphabetic or special character, two decimal digits or eight binary or bits.
16	Defragmentation	The process of rewriting a file to adjacent sections of a hard disk
17	Kernel	Essential instruction routines that are required as a basis for any operations in a computer system
18	Visualization	Using the computer to convert data into picture form
19	Synchronization	The ability to maintain two databases and keep them up to date
20	Implementation	The development and installation and testing of all the system components
21	Data validation	The act of checking data was originally given in the same source
22	Authentication	The process of identifying and individual, usually based on a user name, password or biometrics such as finger prints or voice recognition
23	Hackers	A group of cyber attackers that enjoying intellectual challenge of overcoming software limitations
24	Non-repudiation	A state of affairs where the purported marker of a statement will not be able to successfully challenge the validity of a statement or contract
25	spam	Undesired bulk e-mail messages often selling a product
26	Phishing	A technique used by strangers to fish for information about someone, information that one would not normally disclose to a stranger such as PIN, bank account, number etc.
27	Database	A collection of related information/a comprehensive integrated collection of data which may be stored in multiple records and accessed randomly
28	Intranet	The latest type of network that can be used to facilitate communication within an organization
29	Cache	A special section of random access memory (RAM)
30	Thermionic value	A Cylindrical light bump

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31	Choreography	The interactional style of service
32	Orchestration	The way the service uses other services to achieve its functionality
33	Cryptoanalysis	The process of intercepting an encryption and using brute-force to descript it and break the protocol that exists between the two parties
34	modularity	The act of designing programmes from a set of standard modules
35	syncrhonous	Having a constant time interval between successive bits characters or events.
36	asynchronous	Not having regular time clocked relationship/A type of computer operation in which a new instruction is initiated when the former instruction is completed.

Other technical words found in the corpus are correction, semaphore, interoperability, rehabilitation obfuscation, aggregation, bytecode, manipulations concurrency, terminals, digital colonialism, function, annotations, polymorphism, integers, census-data fetches,, concept exploration, application domain, phreakers, debugging spyware, diodes, ambient intelligence, ubicomp, iteration.

Examples from the corpus;

1. The key points in an oriented model are encapsulation, inheritance and polymorphism.
2. Second class, function will be a utility class comprising static methods for applying some common functions to data.
3. Rehabilitation and correction protect and support Ohioans by ensuring that adult felony offenders are affectively supervised.
4. Defragmentation is another good thing to do.
5. The aim of data validation is to ensure that the data contained in the source document is correct before the processing beginning.
6. Some of the threats include identity spoofing, loss of privacy, loss of data intergrity, replay attacks, viruses, spyware, Trojans other malicious software.
7. Early research in the field sought to differeciate services from standard manufacturing environments in a number of ways: focusing particularly on four generic differences-intangibility, heterogeneity, perishability of output and simultaneity.
8. A user writes a Kernel and specifies the amount of work the kernel will process on the GPU.
9. The threads must wait for each other to effectively share-on-chip cache, using operations like barrier to force all sharing threads to wait at a certain execution point.
10. Throughout the ages, mankind has turned to encryption when trying to protect transmission.
11. As the size of multimedia databases and other repositions continues to grow, the difficulty of finding multimedia information increases
12. In this paper, we propose a new algorithm for data compression, called –bit encoding (JBE).

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13. Alternative to debugging is the development of a science of programming.
14. Each of those thousand of tasks will require data bandwith, an increasingly limited resource in comparison to the computer throughout capabilities of high performance system.
15. An even more significant technological advance took place in 1906 when lee de forest invented the thermionic value.
16. Query language allows computer users to retrieve information and generate custom-designed application in data bases by following simple syntax rules.
17. Intranets or internal webs which are patterned after the internet use the same communications protocol and file formats like the internet.
18. Malicious software such as Botnets, phishing, spam, cyber stalking cyber bulling
19. Cryptography is the process of transforming a message into encryption using a secret key called apher.
20. Choreography describes the interaction style of the service.

The researcher discovered a conglomeration of technical words. The hard conceptual words are employed by writers to capture the technicalities in computer science. Furthermore modern invention in computer science gave rise to the use of hard conceptual words.

CONCLUSION

Academic writing in the field of computer science is replete with technical jargons. Writers convey messages, innovations, novel thoughts and ideas, current inventions in the academic writing. In the bid to do these, they employ the technical words. Some coin words suited for the innovations and inventions. New inventions and novel ideas require new words. So the writers either formulate new words or use the ordinary words and give them specialized meanings. Scientists resort to the use of eponyms when new equipment needs to be named. So in order to name these inventions, they use the names of scientists who invented the items. Furthermore, the academic writing shows empirical research and the state of the art. In order to present their work, the scientists use the hard technical words to show novel ideas. The writers inform the readers about significant and current issues in the field of Computer Science. So ,hard conceptual words are used to do this. Sometimes they resort to the use of semantic shifts, and coinages and at times give old words synonyms. Thus, there is a preponderance of technical words in computer science. The computer science writing is highly technical.

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