ACADEMIC SKILLS FOR COMPUTER STUDIES
PORTFOLIO REPORT

Submitted in partial fulfillment of the requirements for theaward of the Degree of

BACHELOR OF SCIENCE in
ARTIFICIAL INTELLIGENCE
AND MACHINE LEARNING

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Digital Report on PDP

INTRODUCTION:

PDP (Personal Development Plan) strengths and weaknesses can vary depending on the individual and their specific goals. Here are some common strengths and weaknesses associated with PDPs:

Strengths

Goal Clarity: Helps individuals define clear and actionable goals.

Self-Assessment: Encourages regular self-evaluation and reflection.

Motivation: Keeps individuals motivated by tracking progress.

Skill Development: Identifies specific skills that need improvement.

Accountability: Establishes a sense of accountability by setting deadlines.

Career Planning: Assists in long-term career planning and development.

Feedback Integration: Facilitates incorporating feedback from supervisors and peers.

Weaknesses

Time-Consuming: Requires significant time for planning and ongoing evaluation.

Over-Planning: Risk of spending too much time planning instead of taking action.

Flexibility Issues: May become rigid and not adaptable to changing circumstances.

Motivation Drop: Individuals might lose motivation if they don't see immediate results.

Unrealistic Goals: Potential for setting goals that are too ambitious or unrealistic.

Lack of Support: Without proper support and resources, it might be challenging to achieve goals.

Measurement Difficulties: Difficulty in measuring progress for certain types of goals.

A successful PDP balances these strengths and weaknesses, ensuring that the individual remains focused, motivated, and flexible in their personal and professional development journey

Power Point Presentation

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SUBJECT	:	ACADEMIC SKILLS

ROBOTICS

INTRODUCTION

Robotics is the science and engineering of designing, building, and operating robots. These machines can perform tasks automatically or with human guidance, often mimicking human actions. Robotics blends mechanical engineering, electronics, and computer science to create systems that can operate in industries, homes, and even space, transforming how we work and live.

HISTORY OF ROBOTS

The history of robotics dates back to ancient times when early concepts of automated machines appeared in myths and legends. The first real steps toward modern robotics began in the 20th century. In 1921, Czech playwright Karel Čapek coined the term "robot" in his play R.U.R. (Rossum's Universal Robots).

The development of robotics accelerated after World War II, with significant advances in electronics and computing. In 1954, George Devol invented the first industrial robot, Unimate, which was later installed in a General Motors factory in 1961, marking the start of robotic automation in manufacturing.

Since then, robotics has rapidly evolved, with robots becoming more sophisticated and widespread, from industrial use to healthcare, space exploration, and personal assistance, continually pushing the boundaries of what machines can achieve.

ADVANTAGES OF ROBOTS

Increased Productivity: Robots can work faster and more efficiently than humans, especially in repetitive tasks, leading to higher output and consistency in quality.

Enhanced Safety: Robots can perform dangerous tasks in hazardous environments, reducing the risk of injury or harm to human workers.

24/7 Operation: Robots can operate continuously without breaks, making them ideal for tasks that require non-stop performance, such as manufacturing or surveillance.

DISADVANTAGE OF ROBOTS

High Initial Costs: The development, purchase, and maintenance of robots can be expensive, making them a significant upfront investment for businesses.

Job Displacement: As robots take over repetitive and manual tasks, there is a potential for job losses, particularly in industries that rely heavily on human labor.

Limited Flexibility: Robots are typically programmed for specific tasks and can struggle to adapt to new or unexpected situations, limiting their versatility compared to human workers.

FUTURE SCOPE OF ROBOTS

The future scope of robots includes advancements in artificial intelligence, greater integration into daily life, enhanced autonomy, and expanded roles in sectors like healthcare, space exploration, and personalized services, leading to smarter, more adaptable, and efficient systems.

CONCLUSION

In conclusion, robots are transforming industries and daily life by increasing efficiency, improving safety, and enabling new possibilities. As technology advances, robots will continue to play a vital role in shaping the future, offering innovative solutions to complex challenges.

Grouop Report

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I. INTRODUCTION:

With the development of wisdom and technology, new ways were discovered for the exploitation of colorful physical coffers similar as accoutrements , forces and powers. This gradationally leads to the advancement of societies as a whole. The history of computer development represents the capstone of times of technological advancements beginning with the early ideas of Charles Babbage and the eventual creation of the first computer, followed by Alan Turing's ground- breaking work in computing and Artificial Intelligence and the decoding of the German Enigma law. The process involved is a sequence of changes from one type of physical consummation to another, from gears to faucets to transistors to integrated circuits to chips and so on.

Abstract

1.1 A quantum computer is a computing device that uses the principles of quantum mechanics to perform calculations and operations on data. It is designed to take advantage of the unique properties of quantum mechanics, such as superposition and entanglement, to perform certain calculations much faster than classical computers.

2 EVOLUTION OF QUANTUM COMPUTING:

Development of Quantum Computing During the 1970s and the early 1980s, the concept of computing devices based on quantum mechanics was initially investigated by physicists and computer scientists Charles H. Bennet, Paul A. Benioff, David Deutsch, and Richard P. Feynman. This idea arose as scientists pondered the fundamental constraints of computation. The researchers pursued a direction where it was believed that quantum physics experiments could be conducted within a quantum mechanical computer. To tackle complex quantum mechanical problems on a classical computer, it would take exponentially increasing time. However, the entire process of calculations on a quantum computer could be completed in a polynomial time. In 1994, Peter Shor developed a groundbreaking method to address a notorious problem in number theory, known as factorization, using quantum computers. It was demonstrated that a specific set of mathematical operations, specifically tailored for a quantum computer, could be arranged to efficiently factor large numbers in a fraction of the time it would take a classical computer, with the computational time being orders of magnitude smaller. This breakthrough in quantum computing sparked global interest among researcher

3 LIMITATIONS OF CLASSICAL COMPUTERS:

3.1 Public Key Cryptography and Classical Factoring of Big Integers:

Public Key Cryptography and Classical Factoring of Big Integers
A creative fine discovery. In 1970s in the shape of the" Public Key" systems handed a result to the crucial distribution problem. In these kinds of scripts, druggies don't need to agree on a secret key before transferring a communication. The principle of a safe with two keys is employed, where one public access is used to lock it, and the other private key is used to open it. These two keys are in practice large integer figures. One can fluently decide the public key from the private key but notice-versa. This fact behind the process is that some fine operations are more accessible to perform in one direction than the other. For illustration, addition of two figures can be performed a lot more snappily than factorizing the figures.
An algorithm can be defined as a fast algorithm if the time taken to complete the algorithm does n't increase too sprucely when the same process is applied to large figures. For illustration, addition of two thirty digit figures by trial division system takes up a lot further time than that of two three- number figures. Hence the trial division system is n't a fast algorithm in all cases. It's seen that public key cryptosystems could avoid the abecedarian distribution problem. still, the security depends upon unproven fine hypotheticals similar as the difficulty of factoring large integers.

3.2 Searching of an Item with Desired Property:

Quantum logic-based algorithm can search an item with the desired property from a collection of N items with a competitive speed. For example, from a group of N items, a random item is picked up. The likelihood of correct selection is the same as that of the right one—this probability of the right choice in half. Hence on average N/2 operations are required for getting the correct item where the quantum logic-based algorithm by
Grover completes the same task in an average of number of operations

4 CONCEPTS OF QUANTUM COMPUTING:

Contrary to classical computers, the fundamental unit of information in a quantum computer is not binary but more quaternary in nature. It is called a "qubit" (short for a quantum bit), and it is analogous to "bit" used in classical computers. The properties of qubit come from its adherence to laws of quantum mechanics. We can place a qubit not only in the

Physically, the qubit can be visualized as the spin of a one-electron system (s=1/2); the two-state +1/2 and - 1/2 are the eigenstates of the z - component of an external magnetic field of spin ½. Thus, the qubit can take two values, 0 or 1, associated with these two eigenstates of a spin of a single electron.
It can also be the superposition of these two states with complex coefficients. This is the property which distinguishes qubits from classical bits used in conventional computers.

5 EXPRIMENTAL OF QUANTUM COMPUTING:

Heteropolymer based Quantum Computers:

In 1988 the first heteropolymer based quantum computer was designed and built-in by Teich and later improved by Lloyd in 1993. A linear array of atoms is used as memory cells in this heteropolymer based quantum computer. By pumping the corresponding atom into an excited state information is stored on a cell. The transmission of the instruction to the heteropolymer is happened by laser pulses of appropriately tuned frequencies. The nature of the computation that is performed on selected atoms is determined by the shape and the duration of the pulse.

Ion Trap Quantum Computers:

Cirac and Zoller In the year of 1995 first proposed an ion trapped in an external potential can be used as qubits in a quantum computer. It was implemented first by Monroe and collaborators in 1995 and then by Schwarzchild in 1996. The data is encoded in the energy states of ions and the vibrational modes between the ions in an ion trap computer. In theory, a separate laser operates each ion. Evaluation of Fourier transforms with the ion trap computer was found feasible on preliminary tests.

6 QUANTUM ELECTRODYNAMICS CAVITY COMPUTERS:

In the year of 1995, quantum electrodynamics (QED)

superposition and entanglements.

6.1 QUANTUM DOT TECHNOLOGY:

Quantum dots are semiconductor nanostructures having a size less than or equal to its exciton-Bohr radius. The quantum dots have the typical size between and Among various types of quantum dots, the electrostatic quantum dots are best candidates for the implementation of quantum logic gates. An array of quantum dots, in which the dots are connected with their nearest neighbours through gated tunnelling barriers, for fabricating quantum gates using the split-gate technique.

7 Quantum Computing – Parallelism:

Classical computers operate by dividing a task into elementary operations to be carried out serially, one operation at a time. Attempts have been made at making two computers work simultaneously to approach different aspects of a problem at the same time, but these have not been very successful. The major reason for this is the logic built into the microprocessors.

used is inherently serial as even during the times when a classical computer appears to be doing several tasks at once, it just cycles between the steps rapidly one at a time. This is the reason why solving complex, and massive problems put constraints on even the fastest supercomputers. These computers are inefficient for these tasks, not that their microprocessors are slow.

should have parallelism built into it to face a problem with simultaneity. Such computers exist and are called Quantum Computers. The principle of linear superposition tells that the quantum system in a quantum state consists of a superposition of many classical and classical-like states. If this superposition can be protected from all other outwardly interferences from the environment, then a quantum computer can give results depending on all its different classical states. This is quantum parallelism.

operations, error correction, understanding dynamics and control of decoherence, atomic-scale technology and practical applications. New algorithms can be found with the help of the properties of complex numbers (analytic functions, conformal mappings). Required theoretical tools for solving many-body quantum entanglement, are not well developed. Its improved characterization can do the better implementation of quantum logic gates and correction of correlated errors.

Quantum building blocks are the constituents of the system and the observer, yet neither the decoherence nor the measurement has been understood fully yet. The transition from classical to the quantum regime is fascinating to study. If there is something beyond quantum theory, it would be noticed in the struggle for making quantum devices. New limitations of quantum theory may be discovered while trying to conquer decoherence.

The race for miniaturization of electronic circuits is not too far away from the quantum reality of nature. The new paradigm of quantum computing will accelerate AI development and help us develop the innovations of tomorrow. Leading AI companies are making advances in quantum computing by developing quantum processors and novel quantum algorithms.

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8. Conclusion

Quantum computation has become a well-established subject of interest, but opportunities for its future growth are still being pursued. The study is ongoing in quantum algorithms, logic gate

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Journal Review

SPACE X

-by KOWSIC S

Introduction:

Space Exploration Technologies Corp. (SpaceX) has emerged as a dominant player in the aerospace sector. Its mission to reduce space transportation costs and enable the colonization of Mars has driven significant advancements in rocket technology and space exploration.

Technological Innovations:

Reusable Rockets:

SpaceX's development of reusable rockets, particularly the Falcon 9, has dramatically reduced the cost of launching payloads into space. The successful landings and re-flights of the Falcon 9 first stage are milestones in the quest for sustainable space travel.

Dragon Spacecraft:

The Dragon spacecraft, designed to carry cargo and crew to the International Space Station (ISS), represents a significant achievement. The Crew Dragon variant, part of NASA's Commercial Crew Program, has restored the United States' ability to send astronauts to the ISS from American soil.

Starship Development:

The Starship rocket, currently in development, aims to further revolutionize space travel with its fully reusable design and ability to carry large numbers of passengers and cargo to destinations such as Mars and the Moon. Successful test flights, including the Starship SN15, demonstrate significant progress toward this goal.

Economic and Social Impact:

SpaceX has significantly impacted the global space industry by reducing launch costs and increasing the frequency of space missions. This has spurred innovation and competition, leading to a more dynamic and accessible space economy. Additionally, SpaceX's achievements have inspired public interest and support for space exploration.

Challenges and Criticisms:

Despite its successes, SpaceX faces challenges, including technical setbacks, regulatory hurdles, and the immense financial burden of its ambitious projects. Critics also raise concerns about the environmental impact of increased rocket launches and space debris.

Future Prospects:

Looking ahead, SpaceX aims to expand its Starlink satellite constellation, providing global broadband internet coverage. The company's long-term vision includes the establishment of a human settlement on Mars, a goal that continues to drive its technological and operational advancements.

Conclusion:

SpaceX has fundamentally changed the landscape of space exploration with its innovative technologies and ambitious vision. As the company continues to push the boundaries of what is possible, it remains a pivotal force in the quest to make space travel more affordable and sustainable, with far-reaching implications for humanity's future in space.

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