



DEPARTMENT OF COMPUTER SCIENCE



DIGITALLY YOURS

Green Thinking, Innovative Living

M A R C H 2 0 2 4



Transforming ideas into green solutions,
pioneering a world where innovation sustains

VERSION 23.0

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Message from Editorial Team

We are delighted to present the latest developments and achievements of our department, encapsulating the essence of innovation, creativity, and dedication throughout the academic year 2023–2024. With great enthusiasm, we unveil the theme of this year's newsletter: **"DIGITALLY YOURS : Green Thinking, Innovative Living"**. Heartfelt gratitude goes out to all the contributors for their exceptional and insightful articles. We trust that readers will find these pieces both informative and entertaining, especially as they engage with puzzles and riddles included within. Our participation in the editorial board has been a rewarding journey, brimming with new experiences and learning opportunities.



Ms. Shaila Mary J - Ms. Shirley Sheeba S
Nidhi P - Simritha R - Chandana C - Harshita K - Gagana



Message

My sincere congratulations to Department of Computer Science on the successful release of your annual newsletter spotlighting innovation and sustainability! Your dedication to advancing knowledge in these vital areas is truly appreciated. In the contemporary era, the amalgamation of sustainability and innovation stands as a critical strategy to confront global challenges and forge a future that is both robust and forward-thinking.



SR. ALBINA
DIRECTOR



DR. GEORGE LEKHA
PRINCIPAL

I extend my hearty congratulations to Department of Computer Science on the release of the annual newsletter on innovation and sustainability! Your efforts in disseminating knowledge and inspiring positive change are truly appreciated. In today's world, the synergy of sustainability, innovation, and technology is paramount, shaping a future where responsible practices and cutting-edge solutions harmonize for a better, more resilient way of life.



Message

I extend my warmest Congratulations to the Department of Computer Science on unveiling the Annual Newsletter emphasizing innovation and sustainability! In the present age, the fusion of sustainability, innovation, and technology is paramount, shaping a more resilient and interconnected society.



DR. LAKSHMI S.K
DEAN OF NATURAL
AND APPLIED SCIENCES



MS. TULASIMALA B N
ASSOCIATE PROFESSOR

“Successful people have a social responsibility to make the world a better place and not just take from it.” The greatest threat to our planet is the belief that someone else will save it. Environmental sustainability along with human, social and economics is important to preserve natural resources like air, water and wildlife for future generation. Ensure that we at MCC operates with some control over lifestyle that minimizes environmental degeneration and make everyone around us to understand a better quality life for all on this planet. Congratulations!! Motivating faculty and dear student from the School of Computer Science bringing out the newsletter “Digitally Yours - 2024” with aspiring articles from inspiring Carmelites

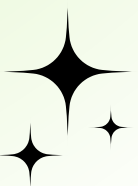


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UNVEILING THE TECHNOLOGICAL REVOLUTION

Introduction: In today's fast-paced world, technology serves as a symbol of progress, continuously transforming our lives and charting the way for our future. From the earliest innovations to the birth of artificial intelligence, technological advancements have played an important role in moulding the world as we know it, intertwining our present and future. Navigating the Tech Landscape: The 21st century is a watershed moment in the history of innovative invention. **Artificial intelligence (AI)** has surpassed all expectations, providing game-changing solutions in a variety of industries. Its ability to process data and make sound decisions has had a huge impact on healthcare, banking, manufacturing, and transportation.

The Internet of Things (IoT) has knitted a web of connectivity, allowing objects to communicate with one another in real time. Smart homes, wearable devices, and industrial automation applications promise a new era of efficiency and connection, offering a world of convenience and productivity. Blockchain, which was first associated with digital money, has evolved. Its decentralised and secure nature has found applications outside of finance, altering supply chain management, voting systems, and data integrity, establishing trust and transparency in a variety of industries.



Impacts Across Sectors: Healthcare has undergone a technological transformation, allowing access to personalised therapies, predictive analytics, and remote medical services. AI-powered diagnostics and surgical robots have improved medical precision and transformed patient care. Technology integration has ushered in a new era of financial innovation. Fintech breakthroughs, AI-based trading algorithms, and blockchain-based transactions have revolutionised financial services accessibility, efficiency, and security, transforming how we manage and trade money. Manufacturing has also experienced a paradigm shift. Automation, robotics, and predictive maintenance powered by AI have optimised manufacturing processes, resulting in higher quality, fewer errors, and more productivity. Looking Ahead: The future of technology presents both enormous potential and enormous challenges. Quantum computing, 5G technology, and biotech advancements provide enormous processing power, quicker connection, and transformative medical discoveries. However, in the midst of this dynamic panorama, ethical questions, data protection, and closing the digital divide pose tremendous difficulties. Balancing innovation with prudent implementation is critical for unlocking the potential of technology while mitigating possible hazards.

Finally, technology is the driving factor behind society evolution and innovation. Its revolutionary potential continues to define a future full of solutions to complex challenges, paving the way for a more linked, efficient, and advanced world. As we navigate this technological terrain, ethical innovation will be critical to ensure that technology serves humanity's collective good.

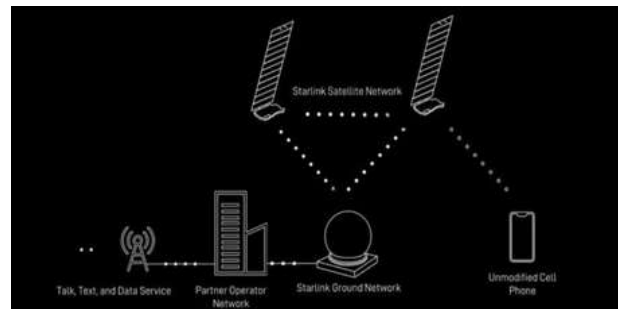
SADIA KAUSAR
2ND SEM BCA



END OF CELL TOWERS: THE NEW BEGINNING OF COMMUNICATION

Satcom refers to satellite communications, wherein it uses artificial satellites to transmit and receive communication signals over a wide range, as in GLOBAL COVERAGE. Moreover, in terms of radiation exposure, it often involves transmissions between ground stations and satellites in orbit, potentially resulting in lower radiation exposure for end-users. And since it has global reach, the transmission of information is especially valuable in remote or inaccessible areas. Whereas cell towers or base stations are critical components in facilitating wireless communication by enabling transmission of signals between mobile devices and the network infrastructure. Cell towers emit non-ionizing radiofrequency (RF) radiation (non-ionizing radiofrequency (RF) radiation refers to a type of electromagnetic radiation with insufficient energy to remove electrons from atoms, unlike ionizing radiation), and scientific studies generally indicates concern if exposure persist for a long term. Besides, the audience reach is notable in densely populated areas but in case of remote or geographically challenging terrain, it is not viable.

Telecommunication, broadcasting, GPS navigation etc. use satellite communication due to its range of coverage as well as lower radiation exposure for end users. However, with the rapid use of the internet for almost every human move, the internet has become a need and not a mere want. And hence, the need for a global approach to build a system that provides a global internet spread.



And here comes the technology of direct to cell service, which we can basically term as a cell tower in space and works on the principle of satcom. Thus, indicating that service will be available across all locations if you have an active signal from the satellite. Correspondingly, no external connections or hardware is required, and the network will work with existing LTE (Long Term Evolution) mobile handsets. Fundamentally, the technology involves a constellation of small satellites in Low Earth Orbit (LEO), user terminals (dish antennas) on the ground, and ground stations. The satellites with Direct to Cell capability have an advanced eNodeB modem onboard that acts like a cellphone tower in space, allowing network integration like a standard roaming partner. On top of that, the technology will also connect internet of things (IoT) devices with common LTE mobile standards, which will allow voice and data services. This technology will help fill gaps in remote areas where cell towers are not present, difficult to set up towers, or signals are weak. This eliminates the need for ground infrastructure like cell towers in remote areas, and by the same token network coverage can be expanded without having to build new infrastructure.

HARSHITA KHOIRAM
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EXPLORING THE RISE OF HUMANOID ROBOTS

In the ever-evolving landscape of robotics, the emergence of humanoid robots is a testament to the fusion of technology and human-like attributes. These mechanical marvels, designed in the likeness of humans, represent a pinnacle of engineering, artificial intelligence, and the quest to bridge the gap between machines and humanity. Humanoid robots, with their human-like appearance and abilities, aim to replicate not only the physical form but also the movements and interactions of humans. Featuring articulated limbs, sensory perception, and AI-driven intelligence, they strive to navigate and interact with the world like humans.

APPLICATIONS

Humanoid robots have a wide variety of applications in fields such as space exploration, healthcare, education, entertainment, and more.



NASA'S VALKYRIE

NASA's Valkyrie robot is capable of operating in "degraded or damaged human engineered environments", such as areas affected by natural disasters. Researchers from MIT's Computer Science and Artificial Intelligence Laboratory (CSAIL) are currently programming the robot to perform various tasks autonomously, with the ultimate goal of being able to use it in future space missions. As a "caretaker" robot, Valkyrie could potentially assist in setting up living compounds on Mars, maintaining power and life support systems until humans arrive

SOPHIA

Sophia by Hanson Robotics, has captured the world's imagination. These robots can walk, gesture, recognize faces, and engage in conversations, which is a significant milestone in robotics and AI. Sophia even received legal personhood in Saudi Arabia, making her the first robot to do so in any country



ROBOT PEPPER

Robot Pepper, designed to interact with humans and provide them with information and assistance in various settings, including hospitals, airports, and shopping malls



CHALLENGES

- **Job Displacement:** As humanoid robots become more capable, there's concern about potential job displacement, particularly in industries where these robots could automate tasks traditionally performed by humans.
- **Privacy and Data Security:** Humanoid robots equipped with sensors and AI capabilities raise concerns about privacy invasion and data security. Ensuring that sensitive information collected by these robots is safeguarded from misuse or unauthorized access is a critical ethical consideration.
- **Human-Robot Relationship Boundaries:** Establishing appropriate emotional and ethical boundaries in human-robot interactions is a nuanced challenge. Defining the roles and limits of these interactions, especially in caregiving or emotional support scenarios, requires careful consideration.
- **Standards and Regulations:** Developing comprehensive standards and regulations for the design, use, and deployment of humanoid robots is essential. Establishing ethical guidelines and safety protocols ensures responsible development and operation within legal frameworks.
- **Liability and Accountability:** Determining liability and accountability in cases of accidents or errors involving humanoid robots poses legal challenges. Clarifying responsibility in situations where robots interact with humans in various capacities is an ongoing legal debate.

CONCLUSION

Humanoid robots are a fascinating combination of technology and human desire—be it for knowledge, connection, progress, or cultural representation—by blending technological innovation with our inherent aspirations. They stand as a testament to our ongoing quest to merge technological advancements with the fulfilment of fundamental human desires and needs giving us a glimpse into a future where smart machines coexist with humans.

The possibilities they offer to transform industries, enhance our lives, and redefine human robot relationships are both exciting and thought-provoking. As we continue to make unprecedented progress in technology, the development of humanoid robots forces us to consider not only the capabilities of machines but also the ethical and societal implications of their integration into our daily lives.

ATIYAH MEHER
4TH SEM BCA



BEYOND THE HORIZON: WHERE INNOVATION BLOOMS IN CROSS DISCIPLINARY RESEARCH

Envision a realm wherein architects curate structures that emanate like constellations by interlacing bioluminescent algae into textiles. Consider the possibility of artistically trained machines, rather than programmers, manipulating paintbrushes with the delicacy akin to that of Vincent van Gogh. These concepts do not originate from science fiction; rather, they are tangible outcomes of interdisciplinary investigation, a formidable amalgamation of creativity that surpasses the limitations of conventional disciplines.

When confronted with issues such as climate change, social inequities, and pandemics, compartmentalized reasoning is no longer sufficient. The current challenges necessitate a diverse array of viewpoints, a symphony of knowledge orchestrated by scholars who have the audacity to venture beyond the confines of their respective fields of study.



A Tapestry of Brilliance, Cross-disciplinary research comprises a rich tapestry constructed from the interwoven fibres of various academic fields. It is the setting in which biologists and economists work together to devise sustainable food systems, or where physicists and architects combine their expertise to create earthquake-resistant urban designs. This exchange of concepts ignites innovation in the same way that flint ignites steel.

Harvesting the Seeds of Sustainability, Sustainability is fundamental to our future; it is not merely a trendy term. Cross-disciplinary research fosters the development of sustainable solutions in a fertile environment. For instance, material scientists and chemists may collaborate to create biodegradable plastics, whereas engineers and ecologists devise inventive methods to extract renewable energy from the Earth's core, wind, and waves.

Innovation with a Human Touch, However, sustainability is about individuals as well as the environment. The integration of human requirements with scientific progress can be achieved through interdisciplinary research. Envision a collaborative effort between psychologists and engineers to develop prosthetic devices that not only operate impeccably but also integrate harmoniously with the mind and body of the recipient. One could also envisage a future in which anthropologists and software developers collaborate to create educational resources that are precisely designed to cater to the unique learning styles of indigenous communities.



Breaking Down the Walls, without a doubt, cross-disciplinary research does not follow a rose paved path. Communication between disciplines can be a dance rife with jargon and divergent methodologies, as silos are a reality. Yet, it is by surmounting these challenges that the expedition becomes so gratifying. By promoting transparent dialogue, cultivating confidence, and allocating resources towards cooperative educational initiatives, we can dismantle these barriers and liberate the limitless capabilities of interdisciplinary inquiry.



A Future Brighter Than a Thousand Suns, the results of interdisciplinary research are not some abstract utopias; rather, they are immediate, tangible realities that are already taking shape. The fertile ground of collaboration is sowing the seedlings of a brighter future, encompassing innovations such as self-healing concrete and 3D-printed organs. By embracing this paradigm shift, we establish a foundation for a future in which innovation is limitless and where the resolutions to our most pressing problems reside not in isolation, but rather in the exquisite tapestry of brilliance across disciplines.

Thus, let us transcend our limitations, welcome the harmonious collaboration of varied perspectives, and jointly foster a future in which innovation and sustainability thrive in tandem.

Never forget that the possibilities are limitless. The imagination is the only constraint



VARSHINI P
4TH SEM MSC CS



RIDDLE

I'm a system that can be read and written, but you can't touch me directly. I store data, run programs, and make your computer function. What am I?

ANSWER: I'M A HARD DRIVE



UNLEASHING THE POWER OF COLLABORATION: SUSTAINABLE AND INNOVATIVE SOLUTIONS THROUGH CROSS-DISCIPLINARY RESEARCH

In the field of research and development, cross-disciplinary collaboration has grown in importance as a means of producing long-term, ground-breaking answers to pressing global problems. Collaborating to solve complex difficulties and find novel answers, scholars from different fields are breaking down traditional disciplinary borders. Delving into the ever changing realm of interdisciplinary research, this essay explains how it promotes sustainable growth and allows for remarkable advances.

Research that draws from multiple disciplines synthesises ideas, skills, and information from those domains. Researchers can adopt a broader perspective and engage in creative thinking since it transcends the boundaries set by particular academic disciplines. By bringing together different fields of study, we can learn more about previously uncharted territory, come up with creative solutions to pressing social and environmental problems, and spur the growth of new ideas.

Building Collaborative Teams for Cross-Disciplinary Research



Achieving sustainable development is the primary goal of multidisciplinary study. Researchers may tackle complicated issues from all angles when they draw on perspectives in the natural and social sciences as well as economics and technology. By working together across disciplines, we can realize sustainable development, an aim that aims to strike a balance between protecting the environment, promoting social justice, and advancing economically.

When different fields come together, it creates an environment where creativity and innovation thrive. Look at these examples of compelling cross-disciplinary investigation for answers that are both sustainable and innovative:

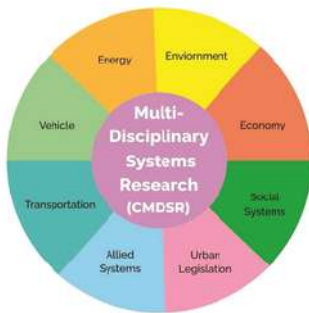
Firstly, Technological Advancements Influenced by Natural Factors, the merging of engineering and biology has played a role in the development of technological innovations that draw inspiration from natural phenomena. By modelling their processes after the robustness and efficacy of natural systems, innovative methods are revolutionizing industries including materials engineering, healthcare, and power production. For instance, designs that mimic the way birds fly and how live things repair themselves are being put into practice.

In addition, an emerging field at the crossroads of design, business, and social science is social entrepreneurship. Efficiently addressing social and environmental challenges through the establishment of financially sustainable businesses is the goal of these efforts. Using knowledge from several disciplines, social entrepreneurs are able to promote equitable and sustainable development, maximize the exploitation of resources, and take advantage of market dynamics.



Thirdly, "smart cities," sustainability and city planning go hand in hand. Teams of experts from several fields are working together to shape the cities of the future. These teams include data scientists, social scientists, urban planners, engineers, and architects. Sustainable and liveable cityscapes are becoming a reality because to cutting-edge technologies like smart infrastructure and data-driven urban design, which optimize energy usage while simultaneously improving efficiency and quality of life.

Moreover, biotechnology and Sustainable Agriculture, the combination of biological, chemical, and agricultural sciences has unleashed the potential for sustainable agriculture. Researchers are using biotechnology to create environmentally friendly methods of pest control, crops that can withstand drought, and better ways to provide nutrients. Reduced environmental effect, improved food security, and more sustainable farming methods are the goals of these developments.



Finally, research that brings together experts from many disciplines allows for the creation of long-term, ground-breaking solutions that go beyond the limitations of any one discipline. The effectiveness of combining different perspectives, expert knowledge, and creative methods increases dramatically when confronted with complex global situations. By embracing multidisciplinary research, we can tap into the full potential of our collective knowledge and accelerate changes in thinking towards a more sustainable future. We must foster a culture of collaboration if we are to promote multidisciplinary collaborations and take advantage of the limitless opportunities that arise at the junction of disciplines.

In today's rapidly evolving world, finding sustainable and innovative solutions to complex problems requires a cross-disciplinary approach. Whether it's tackling environmental challenges, promoting social equity, or driving technological advancements, collaboration across different fields of research has become imperative. In this article, we explore the power of cross-disciplinary research in generating solutions that are both environmentally friendly and socially impactful

CONCLUSION

Cross-disciplinary research holds immense potential for generating sustainable and innovative solutions to the complex problems we face today. By breaking down traditional silos and fostering collaboration between experts from different fields, we can develop holistic solutions that address the root causes of these challenges. Through interdisciplinary dialogue, the integration of diverse perspectives, and the utilization of advanced tools and technologies, cross-disciplinary research is shaping a more sustainable and innovative future. It is through these collaborative efforts that we can drive transformative change on a global scale.

EDITORIAL TEAM

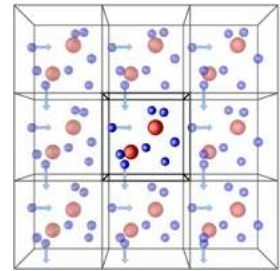


EXPLORING THE HARMONY OF PHYSICS AND COMPUTING: A JOURNEY INTO MOLECULAR DYNAMICS SIMULATIONS

Along the winding paths of scientific exploration, where the realms of physics and computing intertwine, lies a fascinating landscape known as computational physics. In this unique domain, the marriage of computer science and physics unveils a myriad of possibilities, and one striking example of this union is found in the captivating realm of Molecular Dynamics simulations.

Along the winding paths of scientific exploration, where the realms of physics and computing intertwine, lies a fascinating landscape known as computational physics. In this unique domain, the marriage of computer science and physics unveils a myriad of possibilities, and one striking example of this union is found in the captivating realm of Molecular Dynamics simulations.

Life, as we know it, is intricately woven at the molecular level, where atoms and molecules dance in a delicate choreography. Understanding this dance requires a blend of theoretical physics, numerical methods, and the sheer computational prowess of modern technology. Picture a scenario where algorithms, forged from the depths of theoretical physics, become the guiding principles for unravelling the mysteries of molecular motion.



In the heart of this collaboration, algorithms are not merely lines of code; they are the intricate bridges connecting classical mechanics, quantum mechanics, and statistical mechanics. It's a symphony composed of mathematical expressions that describe the forces between particles, rendering the complex dance of atoms and molecules within our grasp.

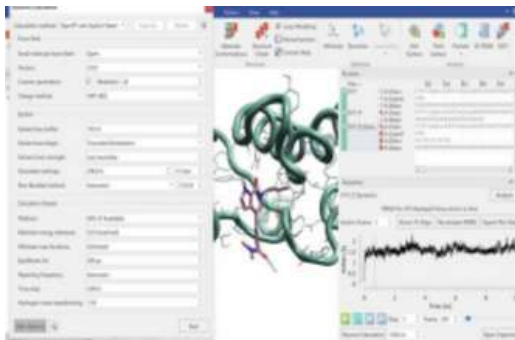
As we delve deeper into the simulation, the computer becomes our lens into the microcosm. Numerical integration techniques take centre stage, discretely stepping through time to simulate the continuous motion of each particle. This is not a mere calculation; it is a journey through the dynamic tapestry of molecular landscapes, and each step forward in time is a revelation. Yet, with great simulations come great computational demands. Here, the collaboration between physicists and computer scientists reaches new heights. Parallel computing techniques, reminiscent of a well-choreographed ensemble, harness the collective power of high-performance clusters and supercomputers. It's a synergy that transforms the theoretical into the tangible, paving the way for simulations on a scale that was once deemed impossible.

Yet, with great simulations come great computational demands. Here, the collaboration between physicists and computer scientists reaches new heights. Parallel computing techniques, reminiscent of a well-choreographed ensemble, harness the collective power of high-performance clusters and supercomputers. It's a synergy that transforms the theoretical into the tangible, paving the way for simulations on a scale that was once deemed impossible.



Behind the scenes, the unsung heroes emerge — the software developers. Physicists and computer scientists collaborate to birth software packages tailored for molecular dynamics simulations. These tools not only encapsulate the scientific rigour required but also offer a user-friendly interface, efficient numerical algorithms, and the ability to breathe life into the simulated worlds.

Upon the completion of these virtual journeys, the narrative does not end. Enter the realm of data analysis, machine learning algorithms, and visualisation tools — to distil meaningful narratives from the data, unveiling the secrets hidden within the intricacies of molecular motion.



In essence, molecular dynamics simulations stand as a testament to the harmonious collaboration between physics and computing. It's a journey where algorithms and equations, borne from the depths of theoretical physics, find expression through the keystrokes of skilled programmers. Together, they unravel the complexities of the microscopic world, reminding us that the dance of atoms and molecules is not just a scientific endeavour but a symphony, where the notes are played by the harmonious collaboration of physics and computing.

GAGANA
3RD BSC PHYSICS, CS



RIDDLE

I am a language with no speech, yet I communicate with machines. What am I?

ANSWER: PROGRAMMING LANGUAGE

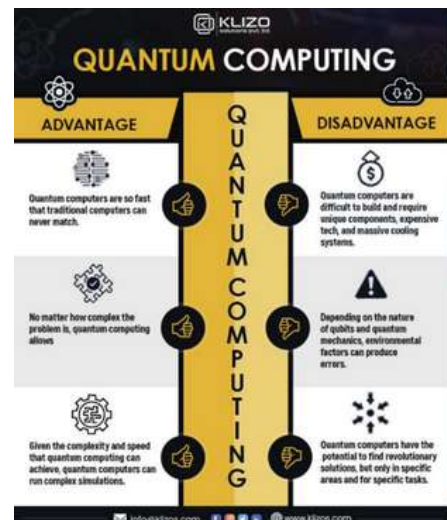


QUANTUM COMPUTING

Quantum computing is a rapidly emerging technology that harnesses the laws of quantum mechanics to solve problems too complex for classical computers. The field of quantum computing includes hardware research and application development. Quantum computers are able to solve certain types of problems faster than classical computers by taking advantage of quantum mechanical effects, such as superposition and quantum interference. When scientists and engineers encounter difficult problems, they turn to supercomputers. These are very large classical computers, often with thousands of classical CPU and GPU cores capable of running very large calculations and advanced artificial intelligence. However, even supercomputers are binary code based machines reliant on 20th-century transistor technology. They struggle to solve certain kinds of problems. If a supercomputer gets stumped, that's probably because the big classical machine was asked to solve a problem with a high degree of complexity. When classical computers fail, it's often due to complexity. Complex problems are problems with lots of variables interacting in complicated ways. Modelling the behavior of individual atoms in a molecule is a complex problem, because of all the different electrons interacting with one another. Identifying subtle patterns of fraud in financial transactions or new physics in a supercollider are also complex problems. There are some complex problems that we do not know how to solve with classical computers at any scale. The real world runs on quantum physics. Computers that make calculations using the quantum states of quantum bits should in many situations be our best tools for understanding it. A classical processor uses classical bits to perform its operations. A quantum computer uses qubits (CUE-bits) to run multidimensional quantum algorithms.

Superconductors:

Desktop computer likely uses a fan to get cold enough to work. The quantum processors need to be very cold – about a hundredth of a degree above absolute zero — to avoid “decoherence,” or retain their quantum states. To achieve this, we use super-cooled superfluids. At these ultra-low temperatures certain materials exhibit an important quantum mechanical effect: electrons move through them without resistance. This makes them "superconductors." When electrons pass through superconductors they match up, forming "Cooper pairs." These pairs can carry a charge across barriers, or insulators, through a process known as quantum tunneling. Two superconductors placed on either side of an insulator form a Josephson junction.



Superposition

A qubit itself isn't very useful. But it can perform an important trick: placing the quantum information it holds into a state of superposition, which represents a combination of all possible configurations of the qubit. Groups of qubits in superposition can create complex, multidimensional computational spaces. Complex problems can be represented in new ways in these spaces.



Control

The quantum computers use Josephson junctions as superconducting qubits. By firing microwave photons at these qubits, we can control their behavior and get them to hold, change, and read out individual units of quantum information.

Entanglement

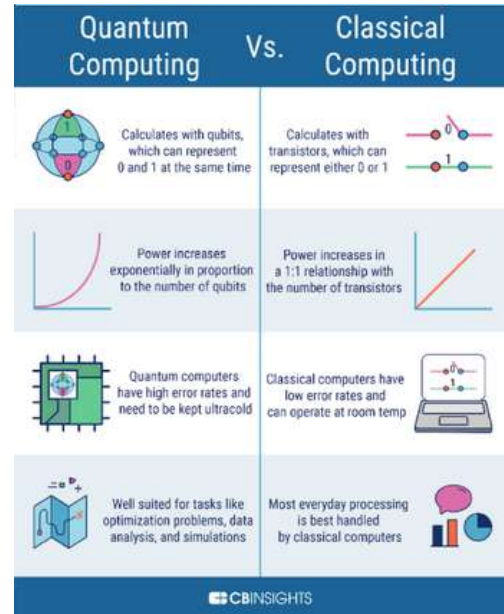
Quantum entanglement is an effect that correlates the behavior of two separate things. Physicists have found that when two qubits are entangled, changes to one qubit directly impact the other.

Interference


Interference

In an environment of entangled qubits placed into a state of superposition, there are waves of probabilities. These are the probabilities of the outcomes of a measurement of the system. These waves can build on each other when many of them peak at a particular outcome or cancel each other out when peaks and troughs interact. These are both forms of interference.

A computation on a quantum computer works by preparing a superposition of all possible computational states. A quantum circuit, prepared by the user, uses interference selectively on the components of the superposition according to an algorithm. Many possible outcomes are cancelled out through interference, while others are amplified. The amplified outcomes are the solutions to the computation.



CATHERINE DAIMARI
3RD BSC PHYSICS, CS



RIDDLE

I'm a code that hides a message or data by transforming it into an unreadable format. What am I?

ANSWER: I'M AN ENCRYPTED CODE



CURRENT TRENDS AND ADVANCEMENTS IN TECHNOLOGY

Technology has soared to new levels and is still developing in a way that was once unimaginable. With the incredible advancements, everything is accessible at our fingertips. Things as difficult as checking the maps of the entire world, communicating with people thousands of miles away to as simple things as finding a good restaurant nearby, everything is possible within seconds with just a click. Today, existence is unthinkable without technology. Current trends in technology include Artificial Intelligence, Machine Learning, Deep Learning,



Natural Language Processing, Cyber Security, Internet Of things, Computer Vision, 5G technology, Blockchain etc.

Here are a few emerging trends in AIML:

- **Explainable AI:** Explainable artificial intelligence (XAI) is a set of processes and methods that allows human users to comprehend and trust the results and output created by machine learning algorithms.
- **AI in Edge Computing:** AI in Edge computing involves deploying artificial intelligence algorithms directly on edge devices, such as IoT devices or local servers, rather than relying solely on centralized cloud computing. This approach enables real-time data processing, reducing latency and enhancing efficiency for applications.
- **Generative AI:** Generative AI refers to a class of artificial intelligence systems and models that have the capability to generate new content, data, or information that is not explicitly programmed. These systems are trained on large datasets and can then autonomously produce outputs that are often indistinguishable from those generated by humans.
- **No-Code Machine Learning:** The no-code machine learning programs allow the use of a simple drag and-drop interface for model building and deployment. It reduces or eliminates the need for long programming hours and code editing.
- **Quantum Computing:** Quantum AI gives solutions to complex problems in less time. It offers faster and more accurate data analysis and pattern predictions. This allows companies to identify unexpected challenges and bring out viable solutions.

Conclusion:

In the ever-changing world of technology, the trends today reflect a constant advancement of innovation. Artificial Intelligence continues to drive innovation across industries, with an emphasis on explainable AI. Edge computing continues to gain progress in real-time data processing. 5G technology improves connectivity and supports Augmented Reality. Blockchain applications continue to expand beyond cryptocurrencies. Cybersecurity continues to be a top priority amidst digital growth. Quantum Computing and sustainable technologies provide glimpses of the future. The convergence of these trends highlights a transformative era that is shaping a world in which technology plays an essential role in transforming our lives.

SANA SHAIK
6TH SEM BSC STATS,CS



EDGE COMPUTING

Edge computing is an emerging computing paradigm which refers to a range of networks and devices at or near the user. Edge is about processing data closer to where it's being generated, enabling processing at greater speeds and volumes, leading to greater action-led results in real time.

It offers some unique advantages over traditional models, where computing power is centralized at an on-premise data center. Putting compute at the edge allows companies to improve how they manage and use physical assets and create new interactive, human experiences. Some examples of edge use cases include self-driving cars, autonomous robots, smart equipment data and automated retail.



COMPONENTS OF EDGE COMPUTING

Edge devices: We already use devices that do edge computing every day—like smart speakers, watches and phones – devices which are locally collecting and processing data while touching the physical world. Internet of Things (IoT) devices, point of sales (POS) systems, robots, vehicles and sensors can all be edge devices—if they compute locally and talk to the cloud.

Network edge: Edge computing doesn't require a separate "edge network" to exist (it could be located on individual edge devices or a router, for example). When a separate network is involved, this is just another location in the continuum between users and the cloud and this is where 5G can come into play. 5G brings extremely powerful wireless connectivity to edge computing with low latency and high cellular speed, which brings exciting opportunities like autonomous drones, remote telesurgery, smart city projects and much more. The network edge can be particularly useful in cases where it is too costly and complicated to put compute on premises and yet high responsiveness is required (meaning the cloud is too distant).

On-premises infrastructure: These are for managing local systems and connecting to the network and could be servers, routers, containers, hubs or bridges.

IMPORTANCE OF EDGE COMPUTING

Much of today's computing already happens at the edge in places like hospitals, factories and retail locations, processing the most sensitive data and powering critical systems that must function reliably and safely. These places require solutions with low latency that do not need a network connection. What makes edge so exciting is the potential it has for transforming business across every industry and function, from customer engagement and marketing to production and back-office operations. In all cases, edge helps make business functions proactive and adaptive—often in real-time—leading to new, optimized experiences for people.



EDGE COMPUTING COMBINED WITH OTHER TECHNOLOGIES

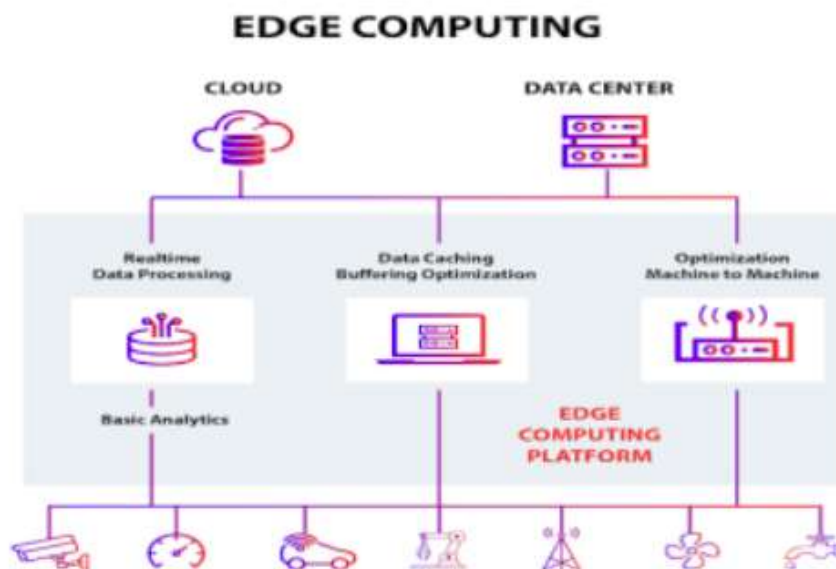
Edge computing uses locally generated data to enable real-time responsiveness to create new experiences, while at the same time controlling sensitive data and reducing costs of data transmission to the cloud. Edge reduces latency, meaning it lowers response time by doing the work close to the source instead of sending it to the more distant cloud and then waiting for a response.

5G - makes edge implementations seamless by guaranteeing the transmission of critical control messages that enable devices to make autonomous decisions. This last-mile technology connects the edge to the internet backhaul and ensures that edge devices have the right software-defined network configurations to do the right things.

IoT and connected devices - are unique data sources that need to be secured and registered in the cloud. Edge will reside near or on these data sources.

Software-defined networking - allows users to configure the overlay networks. It also makes it easy to customize routing and bandwidth to determine how to connect edge devices to each other to the cloud.

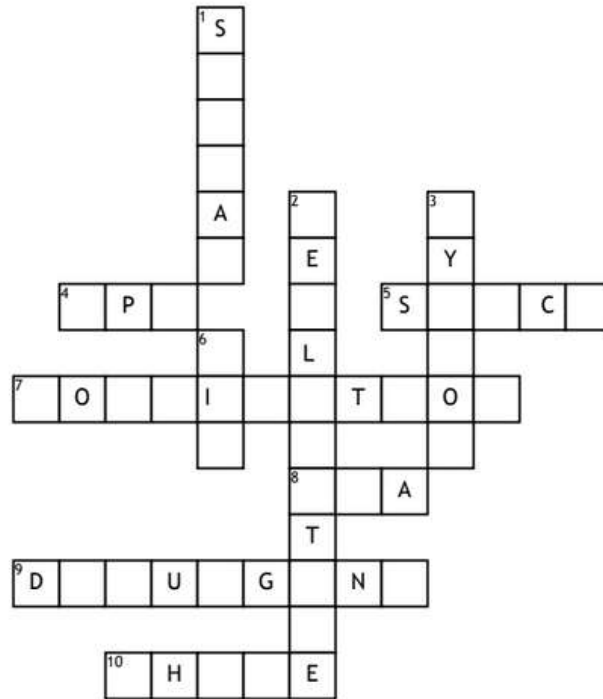
Digital twin - is a critical enabler that organizes physical-to-digital and cloud-to-edge. The twin allows data and applications to be configured using domain terms around assets and production lines rather than database tables and message streams. Digital twins allow domain experts (rather than software engineers) to configure applications to sense, think and act on the edge



NISARGA. V
3RD BSC PHYSICS, CS



PROGRAMMING CROSSWORD PUZZLE



CLUES

ACROSS

4. Abbreviation for a set of rules that dictate how programs should be written. (3)
5. A data structure that follows the Last In, First Out (LIFO) principle. (4)
7. A process of converting high-level code into machine code. (9)
8. A programming language known for its simplicity and readability. (3)
9. A method of finding errors in code by executing it step by step. (7)
10. A type of loop that repeats a block of code while a condition is true. (5)

DOWN

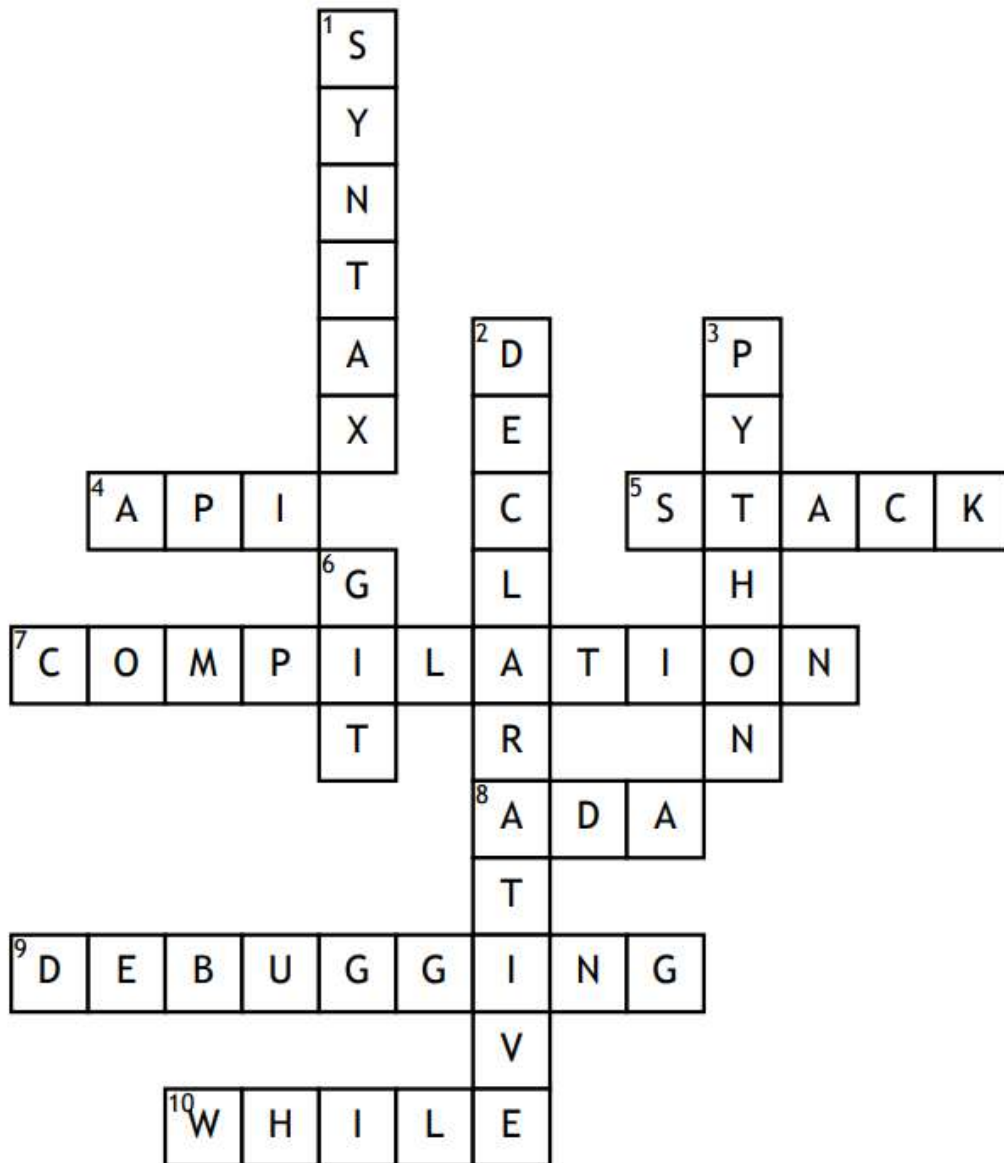
1. The building blocks of a programming language. (7)
2. A programming paradigm that focuses on describing what should be done rather than how to do it. (9)
3. A programming language commonly used for web development. (7)
6. A popular version control system used by developers. (6)

THRUPTHI R
4TH SEM MSC CS



PROGRAMMING CROSSWORD PUZZLE

ANSWER



THRUPTHI R
4TH SEM MSC CS



ZINDAGI

Kya hai ye zindagi,
Koi samaj pata nahi.
Kabhi hasati hai,
Kabhi rulati hai,
Kabhi milati hai,
Toh kabhi akela karti hai zindagi,
Samaj aaye,
isse pehle hi chali jati hai ye zindagi.[1]

Kya hai ye Zindagi,
Koi suljha pata nahi,
Jo paya ,usme khush hote nahi,
Aur dusro ki khushiyaan kabhi gawara nahi.
Mohabbat karte hai toh dushmani milti hai,
Muskuraate hai toh aansuein milti hai,
Samaj aaye ,
isse pehle hi chali jaati hai zindagi .[2]

Kya hai ye zindagi,
Koi bta pata nahi,
Kabhi kisi ke haathon mein hath hote hai,
To kabhi gardan mein haath hote hai,
Kabhi pyaar deti hai ,
Toh kabhi palat jaati hai ye zindagi.
Samaj aaye,
isse pehle hi chali jati hai zindagi.[3]

Kya hai ye zindagi,
Koi keh pata nahi,
Kabhi uljhati hai,
Kabhi suljhati hai,
Samjhna chaho,
toh ek paheli si lagti hai ye zindagi,
Samjh aaye,
isse pehle hi chali jati hai ye zindagi.[4]

Jaisi bhi hai ye zindagi,
Badi Anmol hai ye zindagi,
Iska samjh mein na ana ,
Shayad...
Yahi hai zindagi.[5]

MAA

Ankhon mein masti liye,
din bhar khela karti thi,
Chalna to ata nahi,
Din bhar uske godh mein raha karti thi.
Ek din totli boli mein kuch kaha sahi se to yaad nahi..
Par shayad ek maa ko pukara gaya tha uss din.
Khuda ka Karishma bhi kitna lajawab hai,
Maa ke pairon ke neeche aakhirat ki Jannat di,
Toh maa ke saath ne duniya mein Jannat dikhaayi.
Wo haath ferri to chaaun hogya,
Aanchal fera to garmahat aagyi,
Kuch aisi Kashish thi uske haath mein.
Raat ko uski gun-gunayi hui lori meri gazal bani,
Aur uski orhayi hui aanchal meri chadar,
Kuch aisi noor thi uski seerat mein.
Andhere mein uske haath sahara bane,
Aur uski nigaah meri nazre,
Aur ek din wo khud,
Maa se meri zindagi bnn gayi.

KYA KAROGE?

Sunah hai log sote nahi hai iss sheher mein,
Kabhi aankhein khuli nahi to kya karoge?[1]

Suna hai bhaagte ho tum shohrat-e-zindagi ke peeche,
Zindagi hi na rahi to kya karoge?[2]

Suna hai rote ho namazon mein uske liye,
Mil gaye wo to kya karoge?[3]

Suna hai zindagi mein takleefin bohot hai,
Kabhi qabr ke azaab bhi puch liya kro.[4]

Suna hai jawani bitaate ho har kisi ke ghar mein,
Yawn-al-hisaab mein kya kahoge?[5]

Suna hai masumiyat jhalakti thi is surat se,
Maa'siyat ke parde laga kar kya karoge?[6]

Mashgool ho jis khaslat ki chah mein,
Ban gye to kya karoge?[7]



INSAAN

Hum insaan bhi kitne ajeeb hote hai,
Jise chaha use kbhi kuch kaha nahi,
Aur jise paya use kbhi savikaar kiya nahi.[1]

Jo nazron ke saamne raha,
Uspr kabhi dhyaan gya nhi
Aur jo nazaron se dur hai wo sada yaad ata hai.[2]

Jo mana wo kabhi kaha nahi,
Aur jo kaha wo kabhi mana nahi.
Apni taqleef sari duniya se chupaya
Par apno ki takleef Manzoor nahi.[3]

Jo paya usme kabhi khush hue nahi,
Aur jisme khush hote ,wo kbhi paya hi nahi.
Khud ke aansun chupakar sab ko hasaya
Par dusron ke aansun bardasht hote nahi.[4]

Jo socha wo kabhi kiya nahi
Aur jo kiya kabhi socha nahi.
Jo zindagi ne dikhaya wo kabhi dekhna chaha nhi,
Aur jo dekhna chaha wo kabhi dikha nahi.[5]
Saari duniya se ye largaye par aakhir mein khud se
jeet paya nahi.
Jo manzil pana chaha uske rah mile nahi,
Aur jis raah par chala usme manzil mile nahi.
Jo laut kar nahi aanewale yaad aate hai,
Aur jo maujood hai, unka kadr kiya jata nahi.[6]

Sabke uljhane suljhaate hai
Par khud ke uljhane samjh aate nahi.
Jo kar sakte the wo kbhi karte nahi,
Aur jo karte wo kabhi karna chaha nahi.[7]

Jo khud sapne dekhe use dabaate nahi,
aur dusron ko sapne dekhne ka haq nahi.
Sab ki kamiyan dhoondh lete hai,
Par khud ke daman mein lagi dhool dikhaaye deti
nahi.[8]

Jo khushiyan dete hai unki aehmiyat samjh mein
aati nahi,
Aur jo Rutha hai wo manaya jata nahi,
Jo apne hai unki taqleef dekhi jaati nahi,
Aur jo gair hai unki pareshaani samajh mein aati
nahi.[9]

Sabke takleef dur karte hai ,
Par khud ke dard samjh mein aate nahi.
Sach mein,
Hum insaan bohot ajeeb hote hai.[10]

SHAYARI 1

Likh dun uske naam chaand sitaare ,
Maange wo jo saath humaare.

Nurani si uski surat,
Makhmali si hai awaaz uski,
Muskura de to duniya jagmaga jaaye,
Nazare utha de to mard dagmaga jaaye.

Khanjar hai qamar mein,
Nazare jhuki to ikhlaq badal jaye.

Bolu aur kya tareef mein ,
Chhahe to likh dun ek kitab uske yaad mein.
Par fir, ek zindagi bhi kam par jaaye ,
Uske dedar mein.

SHAYARI 2

Pohoch gayi hai zindagi apne mukaam pr,
Safed chadar hai lipti hui.
Par ye kap-kapahat kaisi?

Ae logon , udha do ek
Moti kambal mujhe,
Ye meri jism thandi kyun?

Andheron nein dafnayi hai har gunah meri,
To ye andherein gina kyun rahe hai
behayayi meri?

GAUSIYA FARHEEN
1ST SEM MCA



COMPUTER FACTS



1	The most expensive computer virus ever is Mydoom which caused \$38 billion worth of damage when it was released in 2004.
2	The first web browser, Mosaic, was released in 1993 and made the World Wide Web accessible to the general public
3	The largest data breach occurred in 2013 when Yahoo announced that over 3 billion user accounts had been hacked
4	The first text message was sent in 1992 and read “Merry Christmas.”
5	The concept of cloud computing dates back to the 1960s when J.C.R. Licklider developed the idea of an “intergalactic computer network.”
6	The average smartphone today has more computing power than the computers used for the Apollo 11 moon landing in 1969.
7	The QWERTY layout on keyboards was designed in the 1860s by Christopher Sholes for typewriters to prevent jamming of mechanical keys.
8	The term “bug” to describe a glitch in a computer system originated in 1947 when Grace Hopper found an actual moth causing a malfunction in the Harvard Mark II computer.
9	The first electronic computer, ENIAC, weighed around 27 tons and occupied a space of about 1,800 square feet. It was completed in 1945.
10	The first computer mouse was invented by Douglas Engelbart in 1964 and was made of wood.



CIPHER CHALLENGE: TEST YOUR CODE-SOLVING SKILLS



```
var arr = [1, 2, 3];
console.log(arr.length);
```

Answer: 3



```
var a = 10;
var b = "5";
console.log(a + b);
```

Answer: "105"



```
int num = 7;
System.out.println(++num
* 8);
```

Answer: 64



```
#include <iostream>
using namespace std;
int main() {
int a = 3, b = 4;
cout << a+++ ++b << endl;
return 0; }
```

Answer: 8



```
word = "Hello"
print(word * 3)
```

Answer: "HelloHelloHello"



```
String str = "Computer";
System.out.println(str.sub
string(2, 5));
```

Answer: "mpu"



CIPHER CHALLENGE: TEST YOUR CODE-SOLVING SKILLS



```
#include <iostream>
using namespace std;
int main() {
    string text = "Programming";
    cout << text.find("gram") <<
        endl;
    return 0; }
```

Answer: 3



```
def mystery_function(n):
    return n + sum([int(digit) for digit in
                    str(n)])
result = mystery_function(57)
print(result)
```

Answer: 69



```
function weirdAddition(a, b) {
    return a * b + (a - b); }
var result = weirdAddition(4, 2);
console.log(result);
```

Answer: 10



```
var sentence = "This is a tricky
                one";
var reversed = sentence.split('
').reverse().join(' ');
console.log(reversed);
```

Answer: "one tricky a is This"



```
function recursiveSum(n) {
    return n === 0 ? 0 : n +
        recursiveSum(n - 1);
}
var result = recursiveSum(3);
console.log(result);
```

Answer: 6



```
#include <iostream>
#include <cmath>
using namespace std;
int main() {
    double result = sqrt(25) +
        pow(2, 3);
    cout << result << endl;
    return 0; }
```

Answer: 11



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SEMINAR ON CYBER SECURITY



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PEER LED WORKSHOP ON CLOUD COMPUTING



IBM COGNOS



IBM CLOUD COMPUTING WORKSHOP



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NETAPP INDUSTRIAL VISIT



VALORVORTEX SHOWDOWN



INTERNATIONAL CONFERENCE ON SUSTAINABLE & INNOVATIVE SOLUTIONS IN CROSS DISCIPLINARY RESEARCH (ICSISCDR@2024)



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