A.V.C COLLEGE OF ENGINEERING,
MANNAMPANDAL, MAYILADUTHURAI
DEPARTMENT OF INFORMATION TECHNOLOGY

INFOLETTER

Volume: 04 **Month: APRIL' 25** **Issue: 1**

HOD'S DESK…

Dear Students

Warm greetings to all.

As we move forward with our academic and professional journeys, I extend my heartfelt wishes for continued success to each one of you. It is both a privilege and a responsibility to be part of a department that continuously strives for excellence in education, research, and innovation.

To our dear students, I encourage you to stay curious and committed to learning. The technology landscape is evolving rapidly, and staying updated with the latest industry trends is not just an advantage—it is a necessity. Engage actively in workshops, internships, certification programs, and Competitions. These experiences will not only enrich your knowledge but also shape you into industry-ready professionals.

I also urge you to participate wholeheartedly in various co-curricular and extra-curricular activities. Such engagements foster leadership, teamwork, and holistic development, which are essential attributes in today's competitive environment. To the dedicated faculty members, thank you for your unwavering support and commitment to nurturing young minds. Your role in guiding and mentoring the students is truly commendable.

Let us continue to work together, uphold the values of academic integrity, and strive towards achieving greater milestones.

Wishing you all great success in your endeavors.

With warm regards,

Dr. K. Krishnakumari
HOD – IT

Contents

Department Message…

- Congratulations to participants, volunteer and organizers of **International Conference on Innovative Research in Engineering and Technology (ICIRET-2025),** which is being hosted by Department of IT and CSE held on 28thMarch 2025.
- Congratulations to M. Punitha, II Year IT who achieved in (Zonal level athletic), (Inter-Zonal level), (CM Trophy) and also got individual championship at Inter college events.

Students Sports Achievements

Parents Meeting Update

- The department of IT conducted 3 successful parents meeting where we had the opportunity to share important updates, celebrate student achievements, and strengthen the bond between school and home on 17/4/2025 (FN, AN) and 21/4/2025. The department is grateful to all the parents who attended and actively participated. Parents support plays a vital role in our students' growth and success.

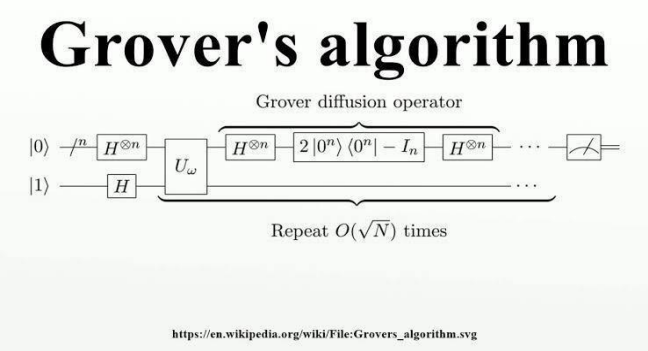
1. Quantum-Optimized Traffic Routing System

R. Ragul, D. Vedika (II-IT)

1.1 Abstract

As urban areas become more congested, optimizing traffic flow in real-time is increasingly difficult for classical systems due

to the complexity and scale of data involved. This project explores how "quantum computing can revolutionize traffic management" using quantum optimization algorithms like the "Quantum Approximate Optimization Algorithm (QAOA)" or "Grover's algorithm"



1.2 Goal

Develop a prototype traffic routing system that uses quantum algorithms to optimize the flow of vehicles across a smart city grid in real time.

1.3 How it works

- Model intersections and road segments as a graph.
- Define constraints such as traffic density, accident zones, and signal timing.
- Use quantum algorithms to find the optimal routes that reduce congestion and travel time

1.4 Objective

To develop a traffic routing system that leverages "quantum computing" to optimize traffic flow in urban environments, minimizing congestion, travel time, and fuel consumption

1.5 Technologies Used

Quantum Frameworks:Qiskit, D-Wave Ocean SDK

Classical Tools: Python, NetworkX, TensorFlow (for traffic prediction)

Simulators: SUMO, MATSim

Data Platforms: Apache Kafka (streaming), PostgreSQL, GIS systems

APIs: Google Maps API, OpenStreetMap, traffic APIs

1.6 Expected Outcomes

- Reduction in average travel time and congestion levels.
- More efficient fuel usage and lower emissions**.**
- A proof-of-concept for integrating quantum computing in real-world applications.
- A scalable architecture for future smart city initiatives**.**

1.7 Conclusion

Quantum computing is more than just a technological advancement, it represents a fundamental shift in how we understand and harness the power of computation. By leveraging the peculiar properties of quantum mechanics,

quantum computers promise to solve problems that are currently beyond reach, opening new frontiers in science, technology, and society. While obstacles remain, the potential benefits are vast, making quantum computing one of the most exciting and transformative fields of the 21st century.

2. AI-Powered Personal Health Assistant for Real-Time Diagnosis and Preventative Healthcare

Suvarna Sri. R , III IT

2.1 Concept

Create an AI-powered personal health assistant that integrates seamlessly into daily life, utilizing multiple sensors and machine learning algorithms to provide real-time health diagnostics and preventative care suggestions. The assistant would leverage data from wearable devices, smart home technologies, genomic data, and medical records to provide proactive health management.

2.2 Key Features

1. Wearable Health Monitoring

A small, comfortable wearable device (e.g., a ring, wristband, or patch) that continuously tracks vital signs such as heart rate, blood oxygen levels, temperature, stress levels, sleep patterns, physical activity, blood glucose (for diabetic users), and other biomarkers.

These sensors could detect early warning signs of conditions like heart attacks, stroke, diabetes, or respiratory issues.

2.Real Time Diagnostics

The AI would use deep learning algorithms to analyze real-time data from the sensors to detect abnormalities. For example, if the system detects an unusual pattern in heart rate or blood pressure, it would notify the user of potential risks.

The system would use natural language processing (NLP) to understand spoken or written symptoms the user may report and

suggest possible diagnoses, based on medical databases and ongoing research.

3. Integrating Genomic Data

Users could input their genomic information (perhaps from genetic testing companies) into the system. By analyzing genetic predispositions, the AI could make personalized recommendations for lifestyle changes or preventative measures (e.g., adjusting diet, exercise, or medications based on genetic risk factors for conditions like cancer, Alzheimer's, or cardiovascular disease).

4. Virtual Health Assistant

A virtual health assistant (accessible via a smartphone, voice assistant, or augmented reality glasses) could provide real-time health insights and answers. For example, the assistant could remind users to take medications, guide them through specific exercises, or even suggest breathing techniques when stress levels are high.

3. Innovation of Quantum Computing

Kaviarasu, IV- IT

Quantum computing is a revolutionary form of computation that operates using the principles of quantum mechanics, the science that explains how matter and energy behave at the smallest scales. Unlike classical computers, which use bits to

process information as either 0 or 1, quantum computers use quantum bits or qubits. Qubits can exist in multiple states at once, thanks to a phenomenon known as superposition. This allows

quantum computers to process a massive number of possibilities simultaneously, giving them the potential to solve certain problems much faster than traditional computers.

Another fundamental principle of quantum computing is entanglement, where two or more qubits become linked in such a way that the state of one directly influences the state of the other, no matter how far apart they are. This creates a powerful level of coordination between qubits, enabling more efficient computation. Additionally, quantum interference helps quantum computers eliminate wrong answers and reinforce correct ones during calculations, making their problem-solving approach very different from classical methods.

Quantum computing holds enormous promise in areas where classical computers struggle. For instance, it could transform cryptography by breaking codes that are currently considered unbreakable, revolutionize drug discovery by accurately simulating complex molecules, and optimize logistics and financial models at levels currently impossible. However, building stable quantum computers is extremely challenging because qubits are highly sensitive to external noise, temperature, and interference, which can cause errors in computation.

Despite being in the early stages, rapid progress is being made by companies like IBM, Google, and startups focused on quantum technology. Governments and academic institutions are also heavily investing in research to solve the practical challenges of scaling up quantum computers. While it may take years before quantum computers are widely used, their potential impact on science, industry, and everyday life is profound, making them one of the most exciting technologies of the future.

4. Carbon Capturing Building

Dhivya Bharathi. S, Guna Priya. L , Harini. S, Divya. R (II IT)

4.1 Abstract

This project aims to design and develop carbon capturing buildings that can effectively reduce CO2 emissions and promote sustainable development. The goal is to create buildings that not only minimize their carbon footprint but also contribute to a cleaner environment.

4.2 Goals

The primary goals of carbon capturing buildings are:

- To capture and utilize CO2 from the atmosphere.
- To reduce greenhouse gas emissions and mitigate climate change.
- To promote sustainable development and create a cleaner environment.

4.3 How it Works

Carbon capturing buildings use various technologies to capture CO2 from the atmosphere, including:

Carbon Capture Systems: These systems use chemical or physical processes to capture CO2 from the atmosphere.

Green Roofs: Green roofs can absorb CO2 through photosynthesis, reducing the building's carbon footprint.

Energy-Efficient Systems: Energy-efficient systems can reduce energy consumption and lower greenhouse gas emissions.

4.4 Technology Used

Carbon capturing buildings use a combination of the following technologies:

Carbon Capture Systems: These systems use chemical or physical processes to capture CO2 from the atmosphere.

Renewable Energy Systems: Renewable energy systems, such as solar or wind power, can reduce energy consumption and lower greenhouse gas emissions.

Energy-Efficient Systems: Energy-efficient systems can reduce energy consumption and lower greenhouse gas emissions.

4.5 Future Outlook

The future outlook for carbon capturing buildings is promising, with potential applications in various industries, including:

Architecture: Carbon capturing buildings can be designed to be aesthetically pleasing and functional.

Urban Planning: Carbon capturing buildings can be integrated into urban planning to create more sustainable cities.

Environmental Sustainability: Carbon capturing buildings can contribute to a cleaner environment and promote sustainable development.

4.6 Conclusion

Carbon capturing buildings have the potential to reduce greenhouse gas emissions and promote sustainable development. With its potential to capture and utilize CO2 from the atmosphere, carbon capturing buildings can contribute to a cleaner environment and a more sustainable future.

Crossword

Clue List

Across

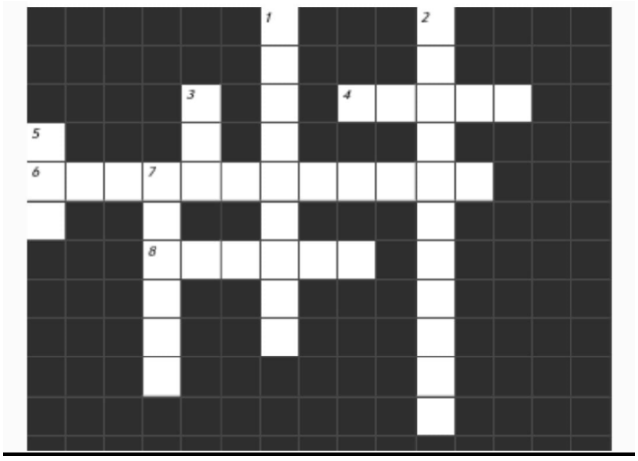
4. A data structure where the elements can be accessed in a Last In First Out (LIFO) manner.

6. The science of secret writing in all its forms.

8. The father of computer science and artificial intelligence.

Down

1. The process of finding and fixing bugs in computer programs.
2. A type of non-volatile storage that can be electrically erased and reprogrammed.
3. The smallest unit of data in a computer.
5. A protocol that controls how data is sent and received over the Internet.\
6. A high-level, general-purpose programming language that emphasizes code readability**.**



QUOTES

"Information technology and business are becoming inextricably interwoven. I don't think anybody can talk meaningfully about one without the talking about the other."

~Bill Gates

"The question is not whether intelligent machines can have any emotions, but whether machines can be intelligent without any emotions."

~ Marvin Minsky

"The development of full artificial intelligence could spell the end of the human race."

~Stephen Hawking

"Success in creating AI would be the biggest event in human history.
Unfortunately, it might also be the last."

~ Stephen Hawking

" I combine magic and science to create illusions. I work with new media and interactive

technologies, things like artificial intelligence or computer vision, and integrate them in my magic.

Marco Tempest"

Rush your ideas to,

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Vedika. D, II IT

INTERNATIONAL CONFERENCE

- The Department of Information Technology and Computer Science and Engineering of A.V.C. College of Engineering, Mannampandal, Mayiladuthurai District, Tamil Nadu, organized the inaugural ceremony of the International Conference on Innovative Research in Engineering and Technology (ICIRET-2025) on 28th March 2025 .
- The event was graced by Justice **K. Venkataraman**, Judge Administrator of A.V.C. Institutions and A.V. Charities, who served as the Chief Guest and delivered the Inaugural Address.
- The conference aims to provide a platform for researchers, academicians, and industry professionals to present and discuss innovations and advances in the field of Engineering and Technology.
- The event was coordinated by **Dr. K. Aruna** (AP,IT) and **Dr. J. Sudha** (ASP, CSE),with **Dr. K. Krishnakumari** (HoD-IT) and **Dr. S. Padmapriya** (HoD-CSE) serving as conveners.
- The function was held under the leadership of **Dr. M. Senthilmurugan**, Director of A.V.C. College of Engineering, and **Dr. P. Balasubramanian**, Principal, an institution approved by AICTE, affiliated to AnnaUniversity, and accredited by NBA and NAAC with 'A' Grade.

Glimpses of IT Department

Parents Meeting

International Conference - ICIRET-2025