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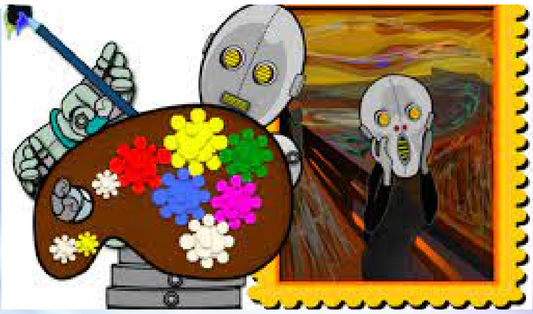
Byte Quest

Department of
CSE

BIOMETRIC DATA PRIVACY

NATURAL LANGUAGE GENERATION



COMPUTATIONAL CREATIVITY

GROWTH OF QUANTUM COMPUTING

Department Vision

To be a center for academic excellence in the field of Computer Science and Engineering education to enable graduates to be ethical and competent professionals.

Department Mission

To enable students to develop logic and problem solving approach that will help build their careers in the innovative field of computing and provide creative solutions for the benefit of society.

FACULTY COORDINATORS

KOMAL KAUR
ASSISTANT PROFESSOR
DR. BHARGAVI PEDDIREDDY
ASSOCIATE PROFESSOR

STUDENT COORDINATORS

TALLURI CHANDRA KIRAN (3/4) CSE C
AMOGHA KANDURI (3/4) CSE C

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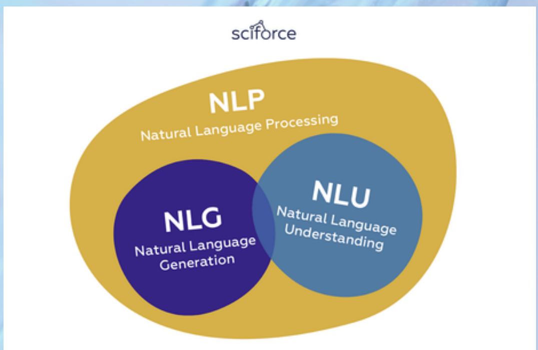
BIOMETRIC DATA PRIVACY

The use of biometric technologies and systems is expanding significantly within the public and private sectors. Biometric technologies (for example facial recognition, voice, fingerprint or iris scanning technologies) are becoming cheaper, more advanced, and more accurate. As a result, they are becoming more integrated into people's daily lives, and in their interactions with government

Biometrics encompass a variety of different technologies that use probabilistic matching to recognise a person based on their biometric characteristics. Biometric characteristics can be physiological features (for example, a person's fingerprint, iris, face or hand geometry), or behavioural attributes (such as a person's gait, signature, or keystroke pattern).
As biometric characteristics are generally unique to individuals, they can be more effective and reliable at uniquely verifying individuals' identities than other methods such as knowledge-based verification systems (for example, a password or PIN) or token-based systems (for example, an ID card or licence). Another advantage is that biometric characteristics cannot be as easily shared, lost, or duplicated as passwords or tokens.

NATURAL LANGUAGE GENERATION



Natural Language Generation, otherwise known as NLG, is a software process driven by artificial intelligence that produces natural written or spoken language from structured and unstructured data. It helps computers to feed back to users in human language that they can comprehend, rather than in a way a computer might.

For example, NLG can be used after analysing customer input (such as commands to voice assistants, queries to chatbots, calls to help centres or feedback on survey forms) to respond in a personalised, easily-understood way. This makes human-seeming responses from voice assistants and chatbots possible.
It can also be used for transforming numerical data input and other complex data into reports that we can easily understand. For example, NLG might be used to generate financial reports or weather updates automatically.NLG techniques are already used in a wide variety of business tools, and are likely experienced on a day-to-day basis. You might see it at work in daily sports reporting in the news, or when using the voice search option on search engines.

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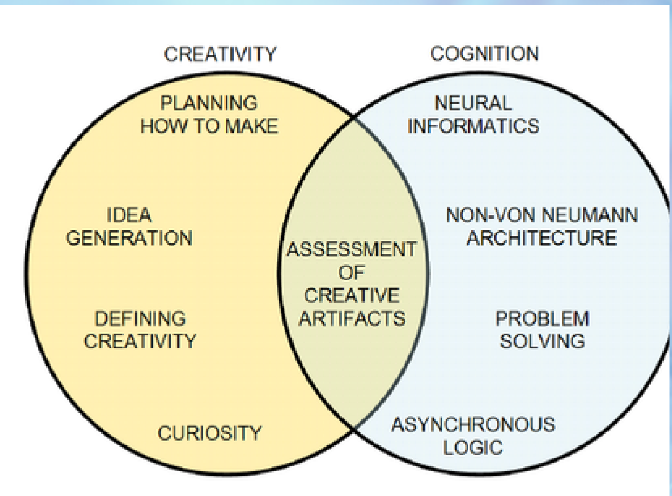
COMPUTATIONAL CREATIVITY

Computational creativity (also known as artificial creativity, mechanical creativity, creative computing or creative computation) is a multidisciplinary endeavour that is located at the intersection of the fields of artificial intelligence, cognitive psychology, philosophy, and the arts



The goal of computational creativity is to model, simulate or replicate creativity using a computer, to achieve one of several ends:

- To construct a program or computer capable of human-level creativity.
- To better understand human creativity and to formulate an algorithmic perspective on creative behavior in humans.
- To design programs that can enhance human creativity without necessarily being creative themselves.

The field of computational creativity concerns itself with theoretical and practical issues in the study of creativity. Theoretical work on the nature and proper definition of creativity is performed in parallel with practical work on the implementation of systems that exhibit creativity, with one strand of work informing the other.

The applied form of computational creativity is known as media synthesis.Theoretical approaches concern the essence of creativity. Especially, under what circumstances it is possible to call the model a "creative" if eminent creativity is about rule-breaking or the disavowal of convention. This is a variant of Ada Lovelace's objection to machine intelligence, as recapitulated by modern theorists such as Teresa Amabile.[2] If a machine can do only what it was programmed to do, how can its behavior ever be called creative?

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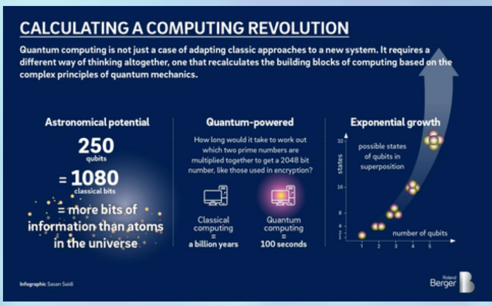
GROWTH OF QUANTUM COMPUTING



Quantum computing is experiencing a phase of rapid evolution, marked by an exponential increase in the number of qubits, the fundamental units of quantum information.

Recent breakthroughs, such as achieving quantum supremacy – where a quantum computer outperforms the most advanced classical supercomputers in specific tasks – have spurred interest and investment in the field. The exponential growth of qubit count is a key indicator of progress, with quantum processors moving from small-scale, error-prone systems to more stable and powerful configurations.

This growth has significant implications for solving complex problems in cryptography, optimization, and simulations that were previously deemed intractable for classical computers. Industries ranging from finance to healthcare are exploring potential applications, anticipating transformative impacts on algorithmic optimization, drug discovery, and materials science.

However, challenges like maintaining qubit coherence and minimizing errors persist. Ongoing research aims to develop fault-tolerant quantum computers capable of performing practical, error-corrected computations.

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