Department of

COMPUTER SCIENCE & ENGINEERING

TECH-EXPLORER

Technical Magazine

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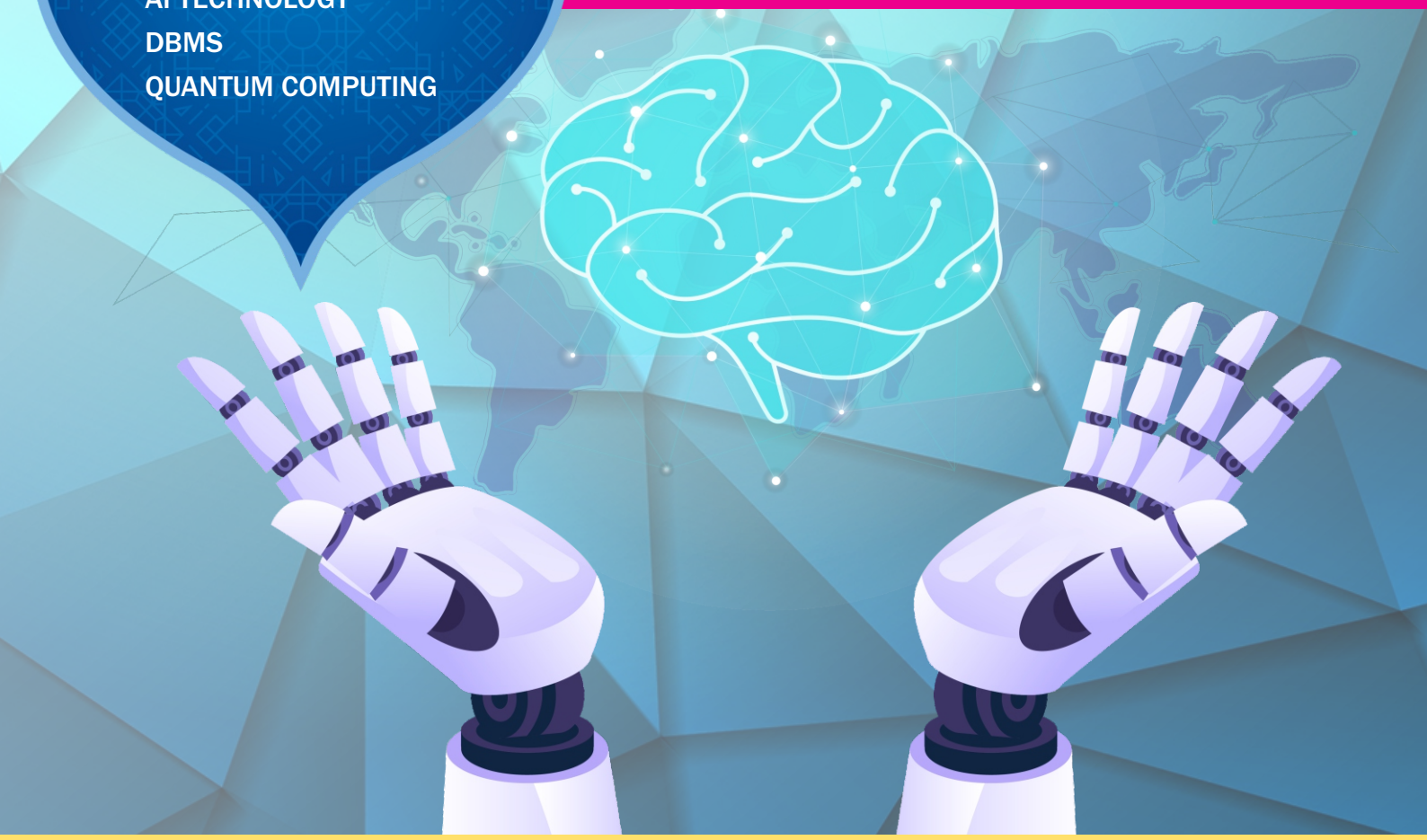

NARAYANA
ENGINEERING COLLEGE:: NELLORE
ACCREDITED WITH GRADE A+ NAAC

Vision of the institute

To be one of the nation's premier Institutions for Technical and Management Education and a key contributor for Technological and Socio-economic Development of the Nation.

Mission of the institute

To produce technically competent Engineers and Managers by maintaining high academic standards, world class infrastructure and core instructions.

To enhance innovative skills and multi disciplinary approach of students through well experienced faculty and industry interactions.

To inculcate global perspective and attitude of students to face real world challenges by developing leadership qualities, lifelong learning abilities and ethical values.

Vision of the Department

To be a choice for education in the area of Computer Science and Engineering, serve as a valuable resource for IT industry & society and exhibit creativity, innovation and ethics to cater the global challenges.

Mission of the Department

M1: To educate learners by adapting innovative pedagogies for enhancing their cognitive skills, technical competence and lifelong learning.

M2: To provide training programs and guidance to learners through industry institute partnerships, social awareness programs, internships, competitions and project works to inculcate research skills toaddress the global challenges.

M3: To provide opportunities for students to practice professional, social and ethical responsibilities using IT expertise with a blend of leadership and entrepreneurial skills.

Program Educational Objectives (PEOs)

PEO-1 : Procure employment/progress towards higher degree and practice successfully in the CS/IT profession. (Successful Career Goals).

PEO-2 : Address complex problems by adapting to rapidly changing IT technologies. (Professional Competency).

PEO-3 : Gain respect and trust of others as effective and ethical team member by demonstrating professionalism and functioning effectively in team-oriented and open-ended activities in industry and society. (Leadership, Ethics and Contribution to Society).

(PROGRAM SPECIFIC OUTCOMES) PSOs

Domain Specific Knowledge: Apply the relevant techniques to develop solutions in the domains of algorithms, system software, computer programming, multimedia, web, data and networking.

Software Product Development: Apply the design and deployment principles to deliver a quality software product for the success of business of varying complexity.

(PROGRAM OUTCOMES) POs

1. Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. The Engineer and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and Team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multi disciplinary settings.

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project Management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multi disciplinary environments.

12. LIFE-LONG LEARNING: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

INTERNATIONAL COOPERATION ON CYBER SECURITY

Cyber security is a compelling problem for scholars of International Politics. Internet technology is so thoroughly integrated into civil society, commerce, governance, critical infrastructures, intelligence collection and law enforcement that the stakeholders necessary to cyber security practices and policies are diverse and complex. This produces a collision of interests, agendas and expectations – that can often be incompatible or even in direct conflict and of course, some aspects of the Internet can be quite independent of geographic and political borders.

Although Cyber Security is quite clearly a post-state problem, it has actually proven very difficult to move beyond a Westphalian conception of either the problem or the possible solutions. This leads to a central paradox about Cyber Security as we currently conceive it: on the one hand, it appears to be a problem that cannot be dealt with effectively by state instruments like the military or law enforcement but despite that, there remains a strong expectation that the state retains responsibility for providing security in this realm. This paradox has led to an emphasis in Cyber Security policy documents on the imperative for international cooperation.

At first glance, it might appear intuitive that states would seek to cooperate on Cyber Security. In the context of the globalization literature of the past two decades, transnational and non-traditional security concerns have frequently been discussed as transcending state capabilities and even as a catalyst for enhanced cooperation. However, despite this clear emphasis on international cooperation on Cyber Security and the assertions that not only is the threat imminent but a solution is in everyone's best interest, progress on this front has been slow. Analysis of the impediments to greater cooperation has largely been the domain of the technical and legal sectors. However, after 25 years of looking for solutions through these two lenses (often in isolation of one another) it is becoming clear that Cyber Security is not simply a technical problem. Rather, there are considerable political elements to this that need to be much more closely examined and understood.

In order to highlight some of the political factors that impede greater progress on international cooperation in this context this paper provides a brief overview of two mechanisms for state to state cooperation on cyber security; NATO and the Council of Europe Convention on Cybercrime. These two mechanisms are useful for this analysis for two reasons; first, both have been in existence long enough to provide a platform for discussion of the range of political factors that might help to explain the reasons why states have not cooperated more comprehensively on this issue. The second reason why they are useful examples is because of their very different origins. NATO is a pre-existing security arrangement that is working to adapt to the Information Age. The 2007 attacks on Estonia made it clear that Article Five of the NATO charter is ill-equipped to address cyber attacks and it prompted a concerted effort to explore the implications of cyber security for future cooperation between member states.

Looking at NATO provides some insight into the challenges of incorporating concepts of cyberwar into conventional military based security arrangements. In contrast, the Council of Europe Convention on Cybercrime (also referred to as the Budapest Convention) is an example of a more recently established mechanism for state to state cooperation specifically on cyber security. It is open to ratification by any country – in or outside of Europe. Predominantly a mechanism for aligning legal regimes, its uptake has been slow and limited. While technical capability and legal factors are certainly part of the explanation for this, this paper argues that a lack of political will has also been a significant impediment to greater cooperation.

This is a question that warrants significant research and it cannot be dealt with in a short paper like this one. Instead, this article sets out the problem of international cooperation through both pre-existing and purpose built security arrangements and proposes some of the factors for consideration and further research. Most significant here is the need to consider more carefully the implications of attribution problems for international relations, the utility of conceptualising cyber security as war and the expectations of less powerful states that they have a greater role in the promotion of values through international law.

Ch. Anusha
Assistant Professor

INTERNET FREEDOM, HUMAN RIGHTS AND POWER

Internet freedom is rapidly becoming understood as a normative framework for how the Internet should function and be used globally. Recently declared a human right by the United Nations, it also forms a central pillar of the USA's 21st Century Statecraft foreign policy doctrine. This article argues that although there is a clear human rights agenda present in this policy, there is also a power element which is much less discussed or acknowledged in the vast literature on Internet freedom. Through an exploration of both a short history and some important lessons learned about Internet freedom, this article demonstrates how the US Department of State has adapted to the information age in such a way as to harness individual agency (reconceptualised in policy terms as civilian power) for the promotion of state power. Although this is by no means as stable or reliable as some more conventional mechanisms it is an expression of power that meets with few challenges to its legitimacy.

A. Mounika
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USING SEMANTIC WEB TECHNOLOGIES IN THE DEVELOPMENT OF DATA WAREHOUSES: A SYSTEMATIC MAPPING

The exploration and use of Semantic Web technologies have attracted considerable attention from researchers examining data warehouse (DW) development. However, the impact of this research and the maturity level of its results are still unclear. The objective of this study is to examine recently published research articles that take into account the use of Semantic Web technologies in the DW arena with the intention of summarizing their results, classifying their contributions to the field according to publication type, evaluating the maturity level of the results, and identifying future research challenges. Three main conclusions were derived from this study: (a) there is a major technological gap that inhibits the wide adoption of Semantic Web technologies in the business domain;(b) there is limited evidence that the results of the analyzed studies are applicable and transferable to industrial use; and (c) interest in researching the relationship between DWs and Semantic Web has decreased because new paradigms, such as linked open data, have attracted the interest of researchers.

J.P. Sanjana
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BUS TRACKER

Bus trackers aid in travel planning with real-time bus arrival and location information. However, their sight-centered design means they're inherently challenging for the blind. A clear understanding of their help-seeking situations in interacting with bus trackers is necessary to design appropriate help features as a solution.

We present a qualitative method to study help-seeking situations of blind users in interacting with bus-trackers, and illustrate its application on the use of CTA bus tracker. Think-aloud observation of seven participants generated verbal reports of performing bus-tracking activities. Qualitative analysis explained what, where, and how help-seeking situations arose in learning the interface, in site interaction, determining estimated time of arrival, requesting ETA alerts, and finding bus location. We elaborate results pertinent to key help-seeking situations, the underlying help needs, and design implications for appropriate help features. The paper contributes a feasible qualitative method to study help-seeking situations, as well as valuable insights into the thoughts, actions and perceptions of blind users in real time bus tracking. This represents the first step towards developing the tool to transform the 45 million blind citizens into empowered transit riders. Implications for transit agencies, real time systems designers, and research in travel management, human-computer interaction and cognitive science are discussed.

K. Sai Meghana
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BRAIN RECORDING, MIND-READING, AND NEUROTECHNOLOGY: ETHICAL ISSUES FROM CONSUMER DEVICES TO BRAIN-BASED SPEECH DECODING

Brain reading technologies are rapidly being developed in a number of neuroscience fields. These technologies can record, process, and decode neural signals. This has been described as mind reading technology in some instances, especially in popular media. Should the public at large, be concerned about this kind of technology? Can it really read minds? Concerns about mind-reading might include the thought that, in having one's mind open to view, the for free deliberation, and for self-conception, are eroded where one isn't at liberty to privately mull things over. Themes including privacy, cognitive liberty, and self-conception and expression appear to be areas of vital ethical concern. Overall, this article explores whether brain reading technologies are really mind reading technologies. If they are, ethical ways to deal with them must be developed. If they are not, researchers and technology developers need to find ways to describe them more accurately, in

M. Sai Poushya
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DATABASE MANAGEMENT SYSTEM

A Database Management System (DBMS) is a set of computer programs that controls the creation, maintenance, and the use of a database. It allows organizations to place control of database development in the hands of database administrators (DBAs) and other specialists. A DBMS is a system software package that helps the use of integrated collection of data records and files known as databases. It allows different user application programs to easily access the same database. DBMSs may use any of a variety of database models, such as the network model or relational model. In large systems, a DBMS allows users and other software to store and retrieve data in a structured way. Instead of having to write computer programs to extract information, user can ask simple questions in a query language. Thus, many DBMS packages provide Fourth-generation programming language (4GLs) and other application development features. It helps to specify the logical organization for a database and access and use the information within a database. It provides facilities for controlling data access, enforcing data integrity, managing con currency, and restoring the database from backups. A DBMS also provides the ability to logically present database information to users.

P. Sravya
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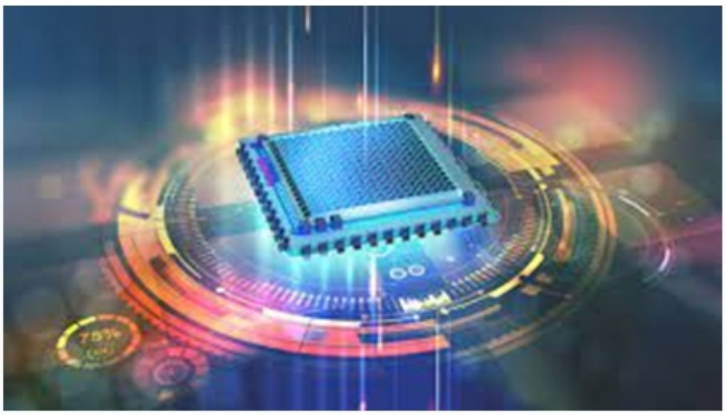
HIGH-PERFORMANCE COMPUTING WITH QUANTUM PROCESSING UNITS



The prospects of quantum computing have driven efforts to realize fully functional quantum processing units (QPUs). Recent success in developing proof-of-principle QPUs has prompted the question of how to integrate these emerging processors into modern High-Performance Computing (HPC) systems. We examine how QPUs can be integrated into current and future HPC system architectures by accounting for functional and physical design requirements. We identify two integration pathways that are differentiated by infrastructure constraints on the QPU and the use cases expected for the HPC system. This includes a tight integration that assumes infrastructure bottlenecks can be overcome as well as a loose integration that assumes they cannot. We find that the performance of both approaches is likely to depend on the quantum interconnect that serves to entangle multiple QPUs. We also identify several challenges in assessing QPU performance for HPC, and we consider new metrics that capture the interplay between system architecture and the quantum parallelism underlying computational performance.

K. Radha Krishna Reddy
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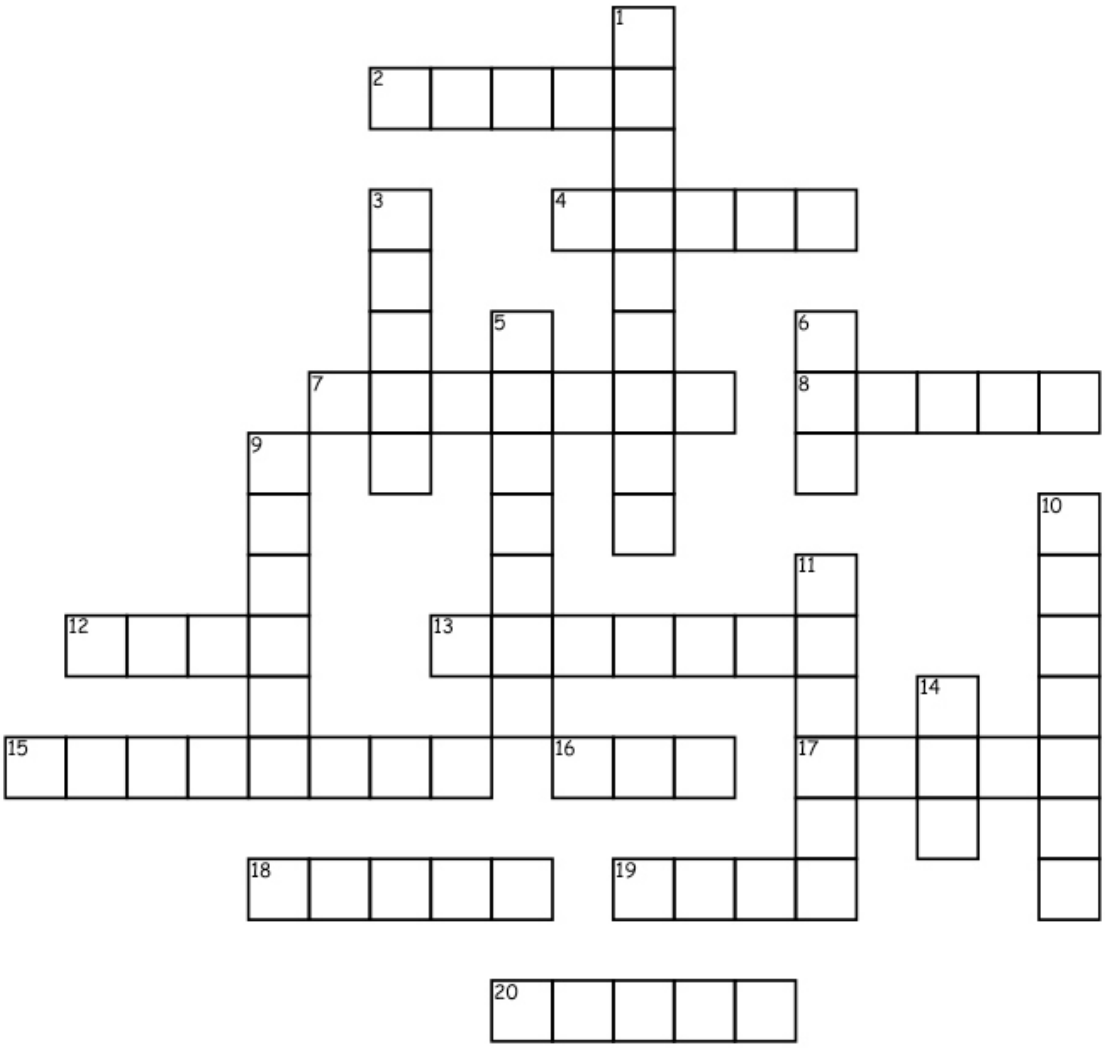
CODING CROSSWORD PUZZLE



Across

2. Kissed Miranda
4. Asks What Her Book Is About
7. Mom's Boyfriend
8. Always Afraid To Ask To Go To The Restroom
12. Fred Flinstone...
13. Main Character
15. Marcus's Teacher
16. Main Character In Book
17. Last Name Of Host For The 20,000 Pyramid
18. Owns Pizza Store
19. Short For Strawberry Shaped Objects
20. Name Of Dentist

Down

1. Has Epilepsy
3. Swiss Miss
5. The Secretary's Nickname
6. The Smart Kid
9. Nickname For The Laughing Man
10. Wants Her To Try A Different Book
11. Person Who Punched Sal
14. Her Best Friend

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