



MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE
DEPARTMENT OF CST

SPARK

MAGAZINE

2019

SCAN HERE



FACULTY
STUDENTS

"THE ROOTS OF EDUCATION ARE BITTER,
BUT THE FRUIT IS SWEET."

EDITION 1

WWW.MITS.AC.IN

Vision of the institute

To become a globally recognized research and academic institution and thereby contribute to technological and socio-economic development of the nation.

Mission of the institute

To foster a culture of excellence in research, innovation, entrepreneurship, rational thinking, and civility by providing necessary resources for generation, dissemination and utilization of knowledge and in the process create an ambience for practice-based learning to the youth for success in their careers.



Vision of the Department

To bring forth globally competent engineers with societal consciousness, who thrive in academics and research in Computer Science & Technology.

Mission of the Department

M1: To deliver technical education of the highest quality by improving the curriculum and using effective pedagogical techniques by qualified faculty.

M2: To foster interaction between Industry and academia, to improve students' abilities in research, innovation, and entrepreneurship.

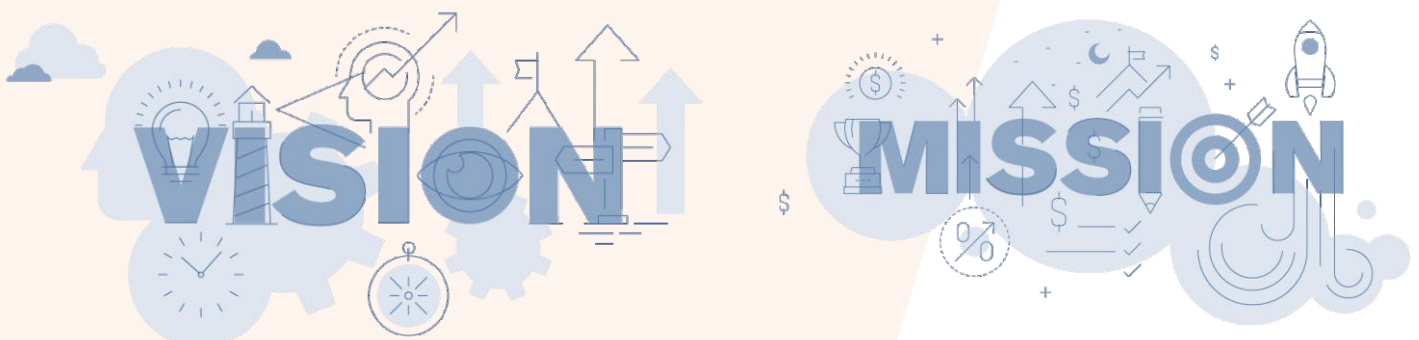
M3: To prepare the students to become professionally competent and intellectually adept by imparting required Skills to mitigate the societal problems.

Program Educational Objectives (PEOs)

PEO-1 : Graduates will have successful career by contributing for innovation of new technologies and systems in the key domains of Computer Science & Technology.

PEO-2: Graduates will be able to perform technical/ administrative roles in information technology industry / R&D sectors and pursue higher education in reputed institutions.

PEO-3 : Graduates will be ethically and socially responsible towards the societal development and opting a career as an entrepreneur with moral values in various domains of Computer Science & Technology.



(PROGRAM SPECIFIC OUTCOMES) PSOs

PSO1: Ability to design algorithms using mathematical models and implement problems through different programming tools to solve real world problems.

PSO2: Ability to apply Software Engineering Principles & Practices in the domain of Database Management Systems, Compilers, Computer Networks, Operating Systems and allied areas, Mobile and web-based applications under realistic constraints.

PSO3: Ability to implement the principles and techniques of Artificial Intelligence and Machine Learning, IoT and Cloud Computing, Data Analytics & Security by applying them to develop intelligent systems and data-driven solutions.

(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.



ARTICLES

GLOBAL COLLABORATION IN SAFEGUARDING CYBERSPACE

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.

Tarun.P

(18691A2854)

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.

Vishal.M
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BALANCING INTERNET FREEDOM AND HUMAN RIGHTS

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.

Sree Bhavana .P
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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.

Sai Ranga Reddy.s
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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.

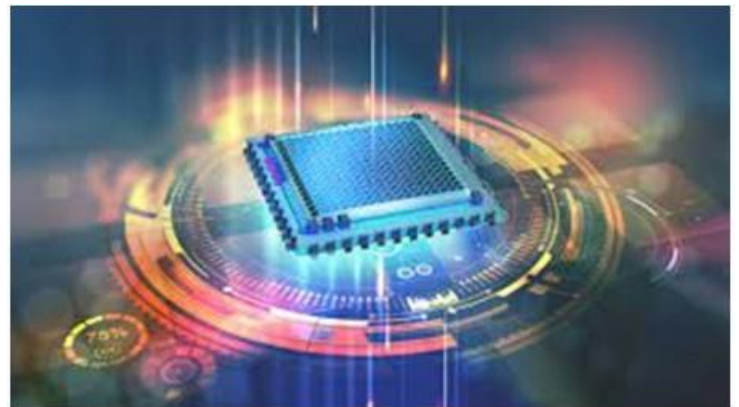


We present a qualitative method to study help-seeking situations of blind users in interacting with bus-trackers, and illustrate its application on the use of CTA bus tracker. Think-aloud observation of seven participants generated verbal reports of performing bus-tracking activities. Qualitative analysis 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.

**Sarath Babu. L
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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.

**Madhuri . T
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Girls' Safety in our Country

where you don't hear of the news of a crime against women in India. We all are aware of the crimes that every female in our country is facing. We read in newspapers how many girls are raped daily and not only raped but also murdered. No girl is safe on the roads of the country. We often teach our girls not to go out at night, and not to wear short dresses but we never teach our boys how to respect girls, how to value them and how to behave with them. We have often heard people saying that if a girl is raped then it's the fault of the girl that she was out at night, she might be wearing a short dress etc. but no one says that boy was wrong or his thinking was wrong or his way of seeing and judging the girl was wrong. The whole point is the mentality of society. They always blame girls for every crime against them. And when it comes to punishing criminals, the government and the police department are never active. We all have heard about the Nirbhaya case and many more. It almost took 7 years to catch and punish the criminals.



Does it really takes 7 years to catch 5-6 criminals and punish them? Is the police force really so weak to catch them? There are many cases of rape in India that are still pending and their criminals are still not punished and they are roaming outside without any fear. There are many families whose girls were raped but they never complain to the police about it and the reason for this is what will people say and the fear of society. Taking candles in hand and marching along the streets is not sufficient to end such crimes. We all need to take initiative instead of teaching girls we need to teach boys how to respect every girl. The criminals should never be left they should be given strict punishment so that they never dare to touch a girl again. Instead of giving speeches, lectures and writing about crimes against girls we all should take an oath that we all will provide safety to girls. Whenever we see a girl in problem, we will help her out without thinking because safety lies in our hand. So, never blame girls for every crime against her. Instead, learn to respect her and her values and emotions.

Kavya. M
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About the Department



The Department of Computer Science & Technology (CST) offers 4-year degree, which is established in the year 2018 and plays a vital role in producing value-based professionals to cater to the ever-challenging needs of technical excellence in the emerging areas of CST. The department offers one UG program with an intake of 60 students and the intake was enhanced to 180 seats in the year 2019. Department has adequate infrastructural facilities required for imparting high quality education and the department is fully structured to meet the contemporary needs of the industry. Imparting high quality education is supported by well qualified and experienced faculty members with rich academic and industry exposure, who have pursued Masters/Ph.D degree from prestigious institutions like NITs, IITs, and Central Universities within India and abroad. Seminars, Workshops, and Technical Symposia are conducted in the department to keep faculty and students updated with latest developments in various technologies.