Technical Club: New Vision of Computing

Technical back ground and utility of the club

This club aims to provide a platform for understanding and development of algorithms and applications in emerging computing trends like: Nature Inspired Computing, Computer Vision, HCI, Cloud Computing and Pervasive Computing.

Nature Inspired Computing

Nature presents the best example of how to solve complex problems efficiently and effectively. The main objectives of the Nature Inspired Computing (NIC) are therefore to develop computational models and algorithms inspired from natural intelligence found in physical, social and biological systems.

NIC aims to develop computational models for understanding biological and social intelligence found in nature. NIC is concerned with developing efficient mathematical and statistical, machine learning and optimization algorithms for solving complex problems found in optimization and control, pattern recognition, data mining and knowledge extraction, multi-criterion decision-making, and self-organization of collective systems.

Computer vision

Computer vision is a field that includes methods for acquiring, processing, analyzing, and understanding images. The theme behind the development of this field is to duplicate the abilities of human vision by electronically perceiving and understanding an image. This image understanding can be seen as the extraction of symbolic information from image data using models constructed with the aid of geometry, physics, statistics, and learning theory.

Examples of applications of computer vision include systems for:

Controlling processes (e.g., an industrial robot), Navigation (e.g., by mobile robot), Detecting events (e.g., for visual surveillance), Modeling objects or environments (e.g., medical image analysis) and Automatic inspection (e.g., in manufacturing applications).

Human Computer Interaction

HCI deals in topics related to computer technology in support of human activity and society. A basic goal of HCI is to improve the interactions between users and

computers by making computers more usable and receptive to the user's needs. HCI is concerned with:

• Methodologies and processes for designing interfaces (i.e., given a task and a class of users, design the best possible interface within given constraints)

• Methods for implementing interfaces

• Techniques for evaluating and comparing interfaces

• Developing new interfaces and interaction techniques

Ubiquitous computing / Pervasive computing

Ubiquitous computing also called as pervasive computing is a computing concept where computing is made to appear everywhere and anywhere. In contrast to desktop computing, ubiquitous computing can occur using any device, in any location, and in any format. A user interacts with the computer, which can exist in many different forms - laptop, tablets, terminals, phones, etc. The underlying technologies to support ubiquitous computing include Internet, advanced middleware, operating system, mobile code, sensors, microprocessors, new user interfaces, networks, location and positioning, etc.

Ubiquitous computing touches on a wide range of topics, including distributed computing, mobile computing, location computing, mobile networking, context-aware computing, sensor networks, human-computer interaction, and artificial intelligence.

Cloud computing

Cloud computing is a type of computing that relies on sharing computing resources rather than having local servers or personal devices to handle applications. In cloud computing, the word cloud is used as a metaphor for "the Internet," so the phrase cloud computing means "a type of Internet-based computing," where different services such as servers, storage and applications are delivered to an organization's computers and devices through the Internet. The major issues are resource scheduling, service discovery, resource management etc.

The association with this club will create interest of students in this technological domain and inspire their creativity to innovate through practical learning and application oriented mindset. Undoubtedly , this is the aspect mainly seen in the engineering profession and thus definitely boost the career prospects and employability. With competence in this domain, students could positively look for exciting career in IT Industry and Premier Research Organizations like ; ISRO, DRDO, etc.

Activities to be considered under the club :

The activities of the club have been well formulated to develop interest and competence of the students in the related technologies with emphasis on application aspects of the concepts. Following activities have been considered ;

- Learning through technical magazines and journals
- development of algorithms and applications in emerging computing trends like: Nature Inspired Computing, Computer Vision, HCI, Cloud Computing and Pervasive Computing.
- Paper writing & presentation
- Quiz and group discussions on the club theme related topics
- Conduction of Workshops and practical training sessions
- Interaction with eminent industrial and academic experts in the domain of club theme
- Industrial and institutional tours
- Considering industrial R&D projects in the domain of club theme