Vasavi College of Engineering
Department of computer science and Engineering
A Report on Guest Lecture by Mayank Mishra, on "Role of Image Processing in Defense"

(conducted under TEQIP-II)

A Guest Lecture by Mayank Mishra, scientist, Team manager, Ministry of Defence, DRDO on Role of Image Processing in Defense" was delivered on August 27th ,2012 for the students of M-Tech (CSE) II-sem.

He initiated his first lecture session with overview of Image processing and his was emphasis was more on applications in area of Image processing. The session was made interactive by thought provoking questions posed by Mr Mayank Mishra to the student audience for example what is need to process an image ? For which convincing answers were given by the student audience.

Later speaker has narrated his version of answer as follows that the images are processed in order to enhance the picture & to restore it to original image, to digitize & code the picture for accurate transmission of picture data , to print & store the pictures , to segment the pictures as per the need. The captivated way of narration of answers by speaker has created an excitement among the students.

The session went on by addressing the various DIP application areas like

1. Satellite DIP: Remote Sensing , Climate , Geology, Land/Sea.
2. Medical DIP: Ultra Sound , X-Rays.
3. Robot Control: Automatic Inspection, Unmanned Autonomous Vehicle.
4. Pattern Recognition: OCR, Fingerprint, Face, Writing Signature Gesture.
5. Television DIP: Brightness, Contrast, Noise Adjustment.

In addition to above discussion he further discussed horizon detection for navigation system with change detection, Terrain analysis & classification. Electromagnetic spectrum usage in the image classification for the satellite images and going MAPS has been discussed.

In second lecture session speaker has emphasized on the architecture of the missile subsystem ,steps for image processing for an aerospace system. He explained image processing flows for aerospace systems:

- Take image statistics
- Calculate optimum threshold
- Threshold image
- Find all detected objects
- Assign IDs
- Extract Gate area
- Get edge or corner statistics
- Calculate optimum threshold.
- Calculate centroid of gate area.

He also discussed issues in image processing for aerospace systems

- Which object representation is suitable for tracking?
- Which image feature should be used?

- How should the motion, appearance and shape of the object be modeled?

He concluded the session by presenting a video show casing the target/terrain in reality, by motivating the students to join research and explore the image processing. He also suggested M-Tech students to choose Image Processing as their carrier option.

The lecture has proven to be very inspiring and informative for the students.