

TEQIP – II: Center of Excellence in Signal and Image Processing Sponsored
Two Week Short Term Training Program

On

“Mathematical and Statistical Foundation to Signal and Image Processing”
28th May to 6th June 2015

Shri Guru Gobind Singhji Institute of Engineering and Technology Nanded had organized a two week short term interdisciplinary training program on “Mathematical and Statistical Foundation to Signal and Image Processing” during 28th May to 6th June 2015. An Expert from Indian Institute of Technology, Jodhpur has conducted this training program. The mission of this training program was to explore concepts of probability, statistics and random processes to use them in the fields of signal/ image processing. The training programme was very comprehensive and began with very basics of statistics and took participants at advanced level to bring them in a position to use these techniques in their area of research. Focus was given to the research problems in Signal and Image Processing.

Participants:

There were in total 41 participants. Out of that thirty faculty members, eight research scholars, Three B.Tech students of different departments of the organizing Institute and other Institutes/ Universities from Maharashtra.

Facilitator:

Dr. Vivek Vijayvargiya form Indian Institute of Technology, Jodhpur.

STTP Objectives:

1. Introduction to Probability, Statistics and Random Processes.
2. Application of Probability and Statistics in Signal and Image Processing.
3. Learning interpretation of Mathematical Equations/ Graphs particularly from Statistics.

On day 1, Workshop started at 10:45 am with small function of 15 minutes of inauguration. Dr. L. M. Waghmare, Director, Shri Guru Gobind Singhji Institute of Engineering and Technology, Nanded was chief guest for this function. In the first session which was from 11:00 am to 12:45 am, Dr. Vivek Vijay gave brief note on basics of Probability Theory. After lunch break of one hour, in the second session which was from 1:45 am to 2:45 pm, he explained participants about the use of probability theory in signal and image processing with lots of real life examples. After the tea break of 15 minutes, session began at 3:00pm with introduction to random variables and their distribution.

On Day 2, session started at 9:30 am, Dr. Vivek Vijay gave a talk on the Joint and conditional distributions and their properties for about one and half hours. In the second session between 11:15 am to 12:45 pm, He discussed the applications of previously taught Bernoulli, Binomial, Poisson and Geometric Distribution concepts so that participants could be able to use them in their own research applications. After the lunch break of one hour, in the third session from 1:45 pm to 2:45 pm he gave light on Uniform, Gamma, Exponential, Chi-square and Beta Distribution. After the tea break of 15 minutes, in the last session between 3:00 pm to 5:00 pm, He summarized all the previously taught distributions and discussed their applications.

On Day 3, session started at 9:30 am, Dr. Vivek Vijay gave a lecture on Moments and application for about one and half hours. In the second session between 11:15 am to 12:45 pm, He discussed Moment Generating function and Characteristic function. After the lunch break of one hour, in the third session from 1:45 pm to 2:45 pm he gave light on Transformation of Random Variable. After the tea break of 15 minutes, in the last session between 3:00 pm to 5:00 pm, He gave solution to the assignment given to all the participants.

Day 4 was given as a holiday.

On Day 5, session started at 9:30 am, Dr. Vivek Vijay spoke on Normal/ Gaussian distribution with its applications in different fields throughout the day.

On Day 6, session started at 9:30 am, Dr. Vivek Vijay gave a talk on Joint and Marginal Distributions for about one and half hours. In the second session between 11:15 am to 12:45 pm, He discussed Conditional distribution and Independence of Random Variables. After the lunch break of one hour, in the third session from 1:45 pm to 2:45 pm he gave light on Moments, Correlation and Covariance. After the tea break of 15 minutes, in the last session between 3:00 pm to 5:00 pm, He gave lecture on Conditional expectation followed by solution to the another assignment given to all the participants.

On Day 7, session started at 9:30 am, Dr. Vivek Vijay spoke on Multivariate Normal/ Gaussian distribution (Bi-variate Normal, Conditional and Marginal, Linear Regression as Conditional Expectation, Covariance Matrix) with its applications in different fields throughout the day.

On Day 8, session started at 9:30 am, Dr. Vivek Vijay gave a lecture on Random sample and sampling distributions for about one and half hours. In the second session between 11:15 am to 12:45 pm, He discussed Methods of Point Estimation. After the lunch break of one hour, in the third session from 1:45 pm to 2:45 pm he gave light on Interval Estimation. After the tea break of 15 minutes, in the last session between 3:00 pm to 5:00 pm, He summarized all the previously taught topics and their applications.

On Day 9, session started at 9:30 am, Dr. Vivek Vijay discussing applications of probability and statistics in different fields till the tea break of 15 minutes at 2:45. After tea break short valedictory function was held and certificates were distributed to participants on their successful completion of training program.

Outcome:

Participants were able to understand the concept of probability and statistics which will help them in research and use of it in different applications.

Dr. A. R. Patil

Coordinator

Dr. M. B. Kokare

Co-coordinator