

Statistical Analysis of Information: Application to Image Processing and SAR (Synthetic Aperture Radar) Images

Invited talk by Dr. Alejandro Frery (Professor at University Federal of Alagoas, and Director of the Laboratory of Scientific Computation and Numerical Analysis, Maceió, Brasil).

Tuesday, March 10th from 12:00 to 13:00

Salón de Actos de la EITE (Pabellón A)

Organizer: CTIM (Imaging Technology Center)

Abstract:

The talk remarks the challenging links between Image Processing, Information Theory and Statistical Analysis. As it is well known, the Information Theory is a well-established active research area founded along the past mid-century upon the Theory of Probability and Statistical Analysis. Information Theory has strong links with the area of telecommunications and the two main concepts at its core are the concepts of Entropy and Divergency. Entropy accounts as a measure of disorder of a given stochastic system. Divergency measures the differences between two stochastic systems. By using the Information Theory, some classic image processing problems such as filtering, edge detection and image classification may be efficiently formulated within the mathematical body provided by the Information Theory. Additionally, in the talk, some modern applications of statistical analysis to image processing problems are also discussed. A new approach to statistical hypothesis testing using the concepts of entropy and divergency applied to some remarkable image processing problems is also presented. As an application of especial interest is the formulation of non-gaussian models found in SAR images, where the discussed formulation provides an efficient framework to efficiently solving image processing problems.

Biography:

Dr. Alejandro Frery is a Professor at the University Federal of Alagoas (Maceió, Brasil) and he is also the director of the Director of the Laboratory of Scientific Computation and Numerical Analysis (Maceió, Brasil). **Prof. Frery** has published relevant works on top-high ranked Journals (IEEE Transactions on Geoscience and Remote Sensing, IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, IEEE Transactions on Computers, Pattern Recognition, ACM Transactions on Sensor Networks, International Journal For Numerical Methods in Engineering among others). See a complete scientific biography of **Prof. Alejandro Frery** at: <http://sites.google.com/site/acfrery/>.