SIGNAL PROCESSING & COMMUNICATIONS (SPCOM) GROUP

Area chair: Balu Santhanam
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Definition of Area

- Retrieval, sampling, storage, transmission & processing of information bearing waveforms.

- Image processing, signal processing, communications, information theory & data science.

- Ubiquitous and finds applications in numerous other areas such as lithography, radar, sonar, drone communications and cognitive radios.

Group Members

- Prof. Majeed Hayat
- Prof. Manel Martínez Ramon
- Prof. Marios Pattichis
- Prof. Sudharman Jayaweera
- Prof. Ramiro Jordan
- Prof. Balu Santhanam

Associated Faculty

- Prof. Eirini Tsiropoulou: Networking & Communications, Wireless communications & IoT
- Prof. Vince Calhoun: Statistical Signal Processing & Biomedical Imaging
- Prof. Michael Devetsikiotis: Network protocols for communications, IoT, smart grids

Undergraduate Classes

- ECE-314: Signals & Systems
- ECE-340: Probability & Statistics
- ECE-341: Intro to Communications
- ECE-439: Intro to DSP
- ECE-442: Wireless Communications

Graduate Tracks

- Digital Signal Processing (DSP)
- Digital Image Processing (DIP)
- Digital Communications

Communications Track

- ECE-500: Linear Systems
- ECE-541: Probability Theory & Stochastic Processes
- ECE-542: Digital Communications
- Recommended: ECE-549, Machine Learning.

DSP Track

- ECE-500: Linear Systems
- ECE-539: Digital Signal Processing
- ECE-541: Probability Theory & Stochastic Processes
- Recommended: ECE-533, ECE-549, Machine Learning

Image Processing

- ECE-500: Linear Systems
- ECE-539: Digital Signal Processing
- ECE-533: Digital Image Processing
- Recommended: ECE-542, Machine Learning

Representative Projects

- Machine learning for RF & Communications Applications.
- SAR-based vibrometry and Discrete Fractional Fourier Analysis for target vibration estimation
- Wideband AM—FM demodulation for communications & signal processing applications
- Teager-Kaiser energy operator based metrics for classification of hyper nasality for early detection of Parkinson's & cleft-lip patients.

Representative Projects

- ICA-SVM Hybrid Approaches for Pattern Recognition Applications
- Image processing for resolution enhancement in optical nano lithography applications.
- Discrete Fractional Fourier Analysis and Applications