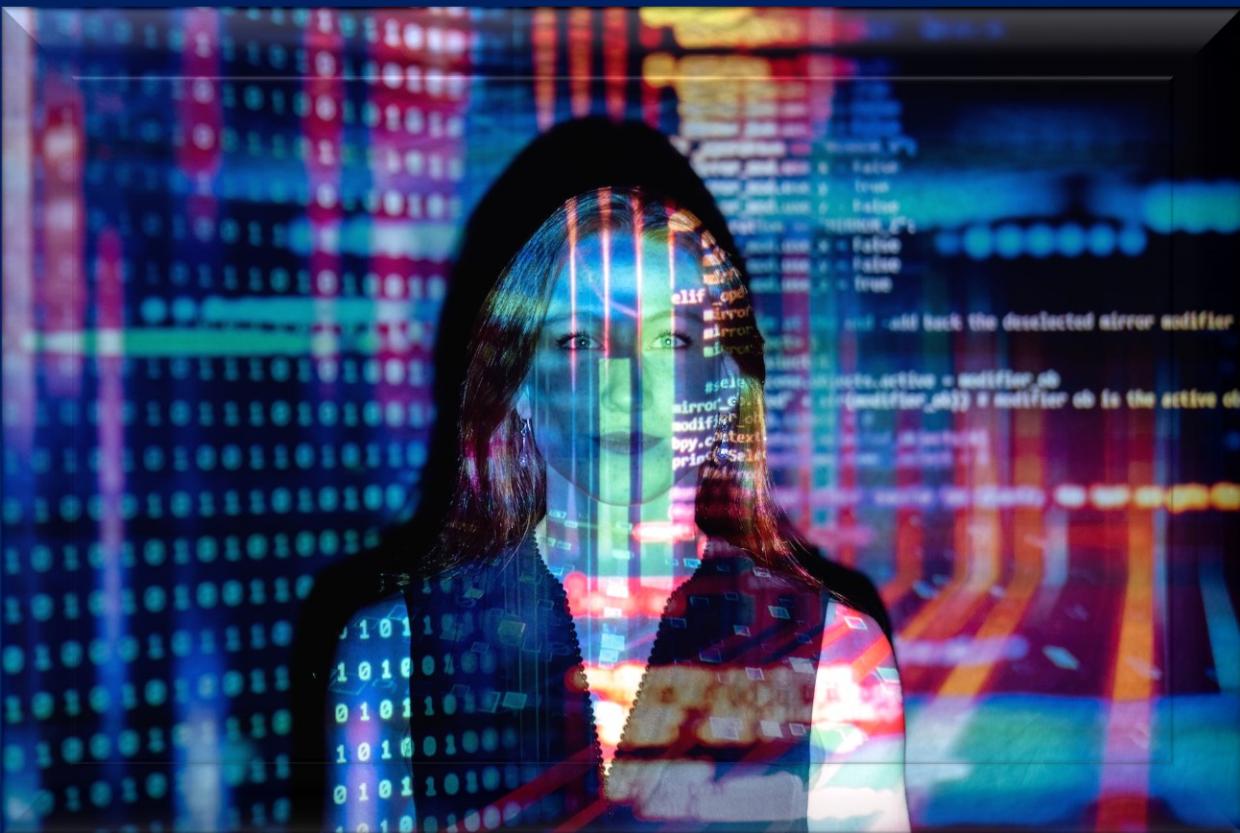# Tata Institute of Fundamental Research

## Joint ASET-IEEE Bombay Section Signal Processing Society Colloquium

## Signal Processing guided Machine Learning
## Prof. Hema Murthy, IIT Madras



The buzzword for building applications of practical relevance is "big data" today. Big data is required primarily to account for the variability in natural signals. Large amounts of data enable neural networks to learn the underlying statistical characteristics of signals. Such models are massive but simple to build since they use the raw signal without pre-processing. A consequence is that they consume significant compute resources for training, and testing.

While deep learning has revolutionized machine learning, in this talk we focus on the use of signal processing to pre-process or mine existing data, so that accurate or "smart data" is presented to machine learning models. Knowledge-based signal processing is primarily used to identify domain-specific events. Owing to significant variability in events, they are best characterised by machine learning models. We draw examples from speech, music, and brain signals to show that signal processing and machine learning should work in tandem.

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*She is a Fellow of ISCA (International Speech Communication Association), 2022 and a Fellow of INAE (Indian National Academy of Engineering), 2017.  She received the IBM faculty award in 2006 for work on speech synthesis in Indian languages.  She has been involved in various projects funded by the Government of India (GoI). She was the Chief Investigator of a consortium project to build text-to-speech (TTS) systems in 13 Indian languages. She is currently leading the Speech Technology effort for the Natural Language Translation Mission funded by GoI.*

## Friday, 27 January 2023 at 4 p.m.

YouTube Live Link: https://youtube.com/live/qgOsdjJdGSk?feature=share