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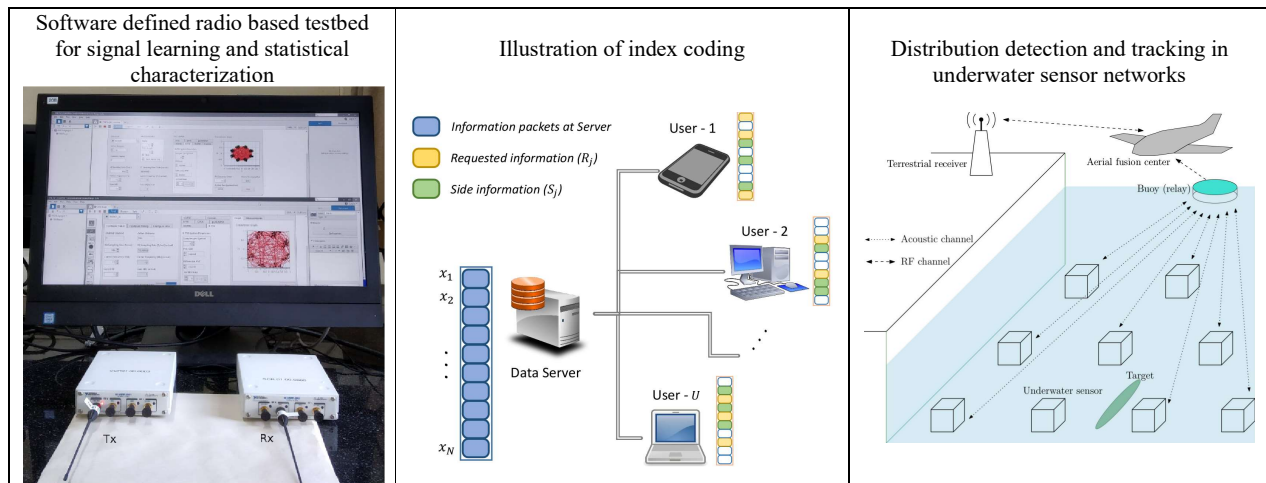


Research Interests

- Wireless communication - physical layer algorithms and analysis
- Information theory - coding and system analysis
- Statistical signal processing - distributed detection and estimation
- Compressed sensing and sparse signal processing
- Machine learning for wireless communication

Brief Summary of Research

- We design and analyze physical layer algorithms for large scale wireless communication systems.
 - Applications: 5G, visible light communication, satellite communication, etc.
 - Few research topics: Index modulation, low-complexity demodulation and decoding, optimal precoding, physical layer security, signal and waveform design.
- We use information theoretic methods to analyze various signal processing and communications systems.
 - Applications: Big data processing, large communication networks, data compression, etc.
 - Few research topics: Index coding, cybersecurity, and error correction coding.
- We develop and analyze fundamental challenges in statistical signal processing.
 - Applications: classification problems, sensor networks, change detection, real-time estimation, etc.
 - Few research topics: distributed detection and estimation of correlated data, multimodal data fusion, and target tracking.
- We develop new and practical algorithms for learning and recovering sparse signals.
 - Applications: Big data, images/video, multimedia data, etc.
 - Few research topics: learning sparse and secure representations of data, practical and robust sparse reconstruction algorithms.



Projects

- *A Compressed Sensing based Framework for Physical Layer Security in Large Dimensional Wireless Communication Systems* - funded by DST INSPIRE.

Recent Publications

- Prashant Khanduri, Lakshmi Narasimhan T. and Pramod K. Varshney, *Online Design of Optimal Precoders for High Dimensional Signal Detection*, IEEE Transactions on Signal Processing, 2019.
- S. Zhang, Lakshmi Narasimhan T., S. Choi, and Pramod K. Varshney, *Fusion of Correlated Decisions Using Regular Vine Copula*, IEEE Transactions on Signal Processing, 2019.
- Lamia M. Kalam and Lakshmi Narasimhan T., *Multistage Clustering based Automatic Modulation Classification*, IEEE VTC-Spring 2019, Malaysia, April 2019.
- Lakshmi Narasimhan T., *Sketching Discrete Valued Sparse Matrices*, IEEE GlobalSIP, Anaheim, USA, November 2018.