Major Signal Processing Areas

Legend:
- Statistical DSP (yellow)
- Deterministic DSP (red)
- Supporting Topics (light blue)

Signal Theory/Transforms
Signal Space, Orthogonal Expansions Wavelets, Time-Frequency Analysis

Detection Theory
Hypothesis Testing, Likelihood Ratio, Matched Filter, GLRT, Estimator-Correlator, Change Detection

Adaptive Filters
Steepest Descent, LMS, RLS, Fast Algorithms, Applications

Advanced DSP
Bandpass Sampling, Analytic Signals, Short-Time Fourier Transform, Correlation, Filterbanks, Multirate

Estimation Theory
Cramer-Rao Bound, Maximum Likelihood, Least Squares, Bayesian, Wiener & Kalman Filters

Modeling & Optimum Filters
Linear MMSE Filters, LS Filters, Linear Prediction, Fast Algorithms, Spectral Analysis, AR/MA/ARMA

Basic DSP
Sampling Theorem, DFT, FFT, Filter Design, Filter Implementation

Random Processes
PDFs, Correlation Functions, WSS, Power Spectrum, Linear Systems

- Mathematical Analysis
- Matrices & Linear Algebra
- Probability & Statistics
- Optimization Theory