

OSP Student Projects from Previous Years

Scale Invariant Feature Transform (SIFT) for Object Recognition
A Study of Multivariate Volatility Modeling Techniques
Filtering Methods in Market Trading
Compressive Sensing Surpasses Classical Face Recognition Techniques
LMS implementation of the Generalized Sidelobe Canceller
Principal Component Analysis Based Face Recognition
Study and Comparison of Various Reduced-Rank Signal Processing Methods: SVD, PCA, and SSA
Adaptive Beamformers
Wireless Channel Models
Adaptive Noise Cancellation in Heart Sound Recordings
Feature Correspondence Using Singular Value Decomposition
Linear Predictive Analysis of Speech and the LPC Vocoder
Digital Still Image Data Compression Schemes
A Review of Portfolio Optimization Techniques with Application to Indian Stock Market Data
Methods of Optimal Financial Portfolio Design
An Introduction to Channel Equalization
Multiple RFID Detection Using Least Mean Square Error Criterion
Effects of Channel Dispersion and Path Correlations in MIMO-Based Cellular Systems
Adaptive Beamforming
Canonical Correlation Analysis and Correlation Canceling
Applying RLS Filter on Vectorial Time Series
A Survey of Prediction In Financial Markets
Optimizing Least Squares Estimation in Image Processing
Spectrum Estimation Techniques
CELP Speech Coding

Location Estimation in Wireless Networks: Enhanced Linear Least Squares Method
Blind Equalization Using the Constant Modulus Criterion
Radar Clutter Removal Using Various Signal Estimation Techniques
An SVD-Based Method of Obstacle Detection and Evasive Maneuvering for Unmanned Aerial Vehicles
Optimal Spectrum Balancing for DSL Systems
Signal Processing Methods for Evaluating Historical Stock Market Data
Adaptive Channel Equalization
Signal Processing Applications in CDMA Multiuser Detection
Inertial Navigation System for the Autonomous Underwater Vehicle Using the Kalman Filter
Image Segmentation Based on Graph-Theoretic Approaches
Image Coding Using SVD and Variable Rate Quantization
Kernel Principal Component Analysis with Fractional Power Polynomial Models for Face Recognition
Image Restoration Using the Preconditioned Iterative Conjugate Gradient Method
Towards Robust Estimation of Camera Geometry Using SVD
Image Based Blood Cell Classification Using SVD
Face Recognition Using Principal Component Analysis
Face Recognition Using Principal Component Analysis of Gabor Filter Responses
Image Restoration and SVD Signal Enhancement
Linear and Nonlinear Prediction Methods
Kalman Filtering and its Generalizations with Applications to Motion Tracking
LPC Based Vocoding
Codeword Optimization in Uplink and Downlink CDMA
Multiuser Detection in CDMA Using MMSE Criterion
Independent Component Analysis: An Overview
Face Recognition Using Principal Component Analysis
Echo Canceling in Telephonic Environments

K-Means, EM, and Spectral Projection Algorithms
Channel Equalization
Subspace Methods for Retrieval of Information from Musical Signals
Study of Adaptive Antennas and their Performance Measures
CELP-based analysis/synthesis of speech
Residual Excited Linear Prediction (RELP) VOCODER
Image Coding Using SVD and Variable Rate Quantization
Blind Equalization Using the Constant Modulus Criterion
Principal Component Analysis with Missing Data and Outliers
Codeword Adaptation and Tracking for Distributed Interference Avoidance
Wireless Link Bandwidth Estimation–Some Practical Considerations
Transform-Domain Adaptive Filtering
Introduction to Adaptive Antenna Arrays
Subspace Approach to Speech Processing and Sunspot Problem
Introduction to Adaptive Control and System Identification
Adaptive Channel Equalization
Overview of Kalman Filter
Voice Coding
Filters in Image Processing
Adaptive Linear Prediction of Base Station Transmission Power in Cdma2000 1X System.
Independent Component Analysis and Its Applications in Blind Source Separation.
Lossless Compression of Still Images Using Predictive Coding.
Study and Comparison of Various Reduced-Rank Signal Processing Methods: SVD, PCA, SSA, CCA.
Combined Adaptive Power Control and MMSE Interference Suppression for CDMA systems
The Use of Adaptive Antennas in the Mobile Radio Environment
Adaptive Channel Equalizers: Performance and Application to Time-Variant Multipath Channels

Thresholding in Wavelet-Based Denoising Schemes
A Review of Independent Component Analysis Techniques
Comparison of Methods of Channel Equalization
Study of the LMS, RLS, FAEST, GL, and RLSL Algorithms and Their Application to Image Processing
Multivariate Financial Time Series – Data Mining in Finance: A Study
Echo Cancellation
Angle of Arrival Estimation
Enhancement of NMR Spectra Using the SVD
System Identification Using Partial Gradient Lattice IIR Filter
Study of Reduced-Rank Signal Processing Techniques: SVD, PCA, CCA, SSA
Blind Adaptive Multiuser Detection
Interference Canceling in CDMA Wireless System
Intelligent RLS Processing of Source Location Estimates
Transform Methods for Data Compression
Comparing Adaptive Algorithms for an Acoustic Noise Canceling Application
Comparison of Various Spectrum Estimation Techniques
Non-stationary Tracking Capabilities of LMS, RLS, GL, and Double/Direct RLSL Adaptive Algorithms
Signal Processing Techniques for Third Generation Wireless Systems
Acoustic Echo Cancellation
Angle of Arrival Estimation in CDMA Systems
RLS and LMS Tracking Analysis for Time-Variant Wideband Channels
Spectrum Estimation: Study of Multitaper and Parametric Methods
RLS ARMA Filter with Variable Forgetting Factor for Speech Signal Modeling
Cross-Language Speaker Identification Using Correlation Canceling
Times Series Analysis Using Linear and Nonlinear Methods
Speaker Identification Using LPC Features

Adaptive Techniques for Channel Equalization

Channel Equalization and Echo Cancellation Systems and Techniques

Conventional and Parametric Spectrum Estimation

Introduction to System Identification and Adaptive Control

Adaptive Algorithms for Tracking Non-Stationary Environment

Decision Making in Information Retrieval Systems

Conventional Spectrum Estimation Techniques

Channel Equalization Techniques

Parametric Spectrum Estimation of Interferometer Data.

Active Noise Control.

Study of the Gram-Schmidt Preprocessor as Used in a Modern Phased Array Radar System.

Application of Correlation Cancellers for Enhanced Reception in Wireless TDMA/CDMA Overlay Systems.

An Adaptive Linear Predictor to Extract the LPC Parameters of Speech.

Neural Networks for Time Series Prediction.

Improving Training Set Synthesis for Image Vector Quantization.

Introduction to System Identification and Adaptive Control.

The Use of Adaptive Antennas in the Mobile Radio Environment

Communication Network Traffic Prediction Using Levinson's Algorithm

Analysis-Synthesis of Speech Signals

Correlation Cancelers in Wireless TDMA/CDMA Overlay System

Speaker Identification Using LPC Features

QPSK Modem Simulator with Adaptive LMS Equalizer

Other Suggested Projects

Study the capabilities of LMS, RLS, GL, FAEST, and various versions of RLSL, in tracking a non-stationary environment.

Study MUSIC and Minimum-Norm Methods versus LP for angle-of-arrival estimation and harmonic retrieval (dependence on SNR, angular separation, etc.).

Study the performance of various adaptive eigenvector methods for tracking the signal and noise subspaces, including partial SVD methods and neural networks.

Study neural networks for time series prediction, and other non-linear LP-based models, such as threshold models.

Study convergence and tracking performance of adaptive antennas, Gram-Schmidt and modified Gram-Schmidt preprocessor arrays.

Study impulse response and pole/zero identification methods using eigenvector and SVD methods.

Study and compare various reduced-rank signal processing methods, such as SVD, PCA, singular spectral analysis, canonical correlation analysis.

Study adaptive algorithms for wide-band adaptive antennas, including constraints (e.g., Griffiths-Jim type.)

Study IIR adaptive filtering algorithms, their convergence and tracking properties.

Adaptive formulation of selective nulling array processing algorithms.

Study performance, convergence, and computational aspects of transform-domain adaptive filtering, such as DCT, or wavelet-based transforms.

Study ARMA methods of spectrum estimation, implemented adaptively and by block processing.

Active noise cancellation and adaptive loudspeaker systems.

Adaptive antennas for cellular communications systems.

Study adaptive blind deconvolution methods for channel equalization.

Develop dynamic predictive deconvolution design methods for broad-band reflectionless coatings or transmission line terminations, with prescribed reflection frequency response.

Study adaptive control and system identification methods.

Investigate details of channel equalization and echo cancellation systems and techniques.

Study and compare data smoothing methods, such as wavelet, spline, and kernel smoothing methods.