

NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mathematics - Dynamic Data Assimilation: An Introduction

Subject Co-ordinator - Prof. S. Lakshmivarahan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

- Lecture 1 - An Overview
- Lecture 2 - Data Mining, Data assimilation and prediction
- Lecture 3 - A classification of forecast errors
- Lecture 4 - Finite Dimensional Vector Space
- Lecture 5 - Matrices
- Lecture 6 - Matrices (Continued...)
- Lecture 7 - Multi-variate Calculus
- Lecture 8 - Optimization in Finite Dimensional Vector spaces
- Lecture 9 - Deterministic, Static, linear Inverse (well-posed) Problems
- Lecture 10 - Deterministic, Static, Linear Inverse (Ill-posed) Problems
- Lecture 11 - A Geometric View \hat{A} Projections
- Lecture 12 - Deterministic, Static, nonlinear Inverse Problems
- Lecture 13 - On-line Least Squares
- Lecture 14 - Examples of static inverse problems
- Lecture 15 - Interlude and a Way Forward
- Lecture 16 - Matrix Decomposition Algorithms
- Lecture 17 - Matrix Decomposition Algorithms (Continued...)
- Lecture 18 - Minimization algorithms
- Lecture 19 - Minimization algorithms (Continued...)
- Lecture 20 - Inverse problems in deterministic
- Lecture 21 - Inverse problems in deterministic (Continued...)
- Lecture 22 - Forward sensitivity method
- Lecture 23 - Relation between FSM and 4DVAR
- Lecture 24 - Statistical Estimation
- Lecture 25 - Statistical Least Squares
- Lecture 26 - Maximum Likelihood Method
- Lecture 27 - Bayesian Estimation
- Lecture 28 - From Gauss to Kalman-Linear Minimum Variance Estimation
- Lecture 29 - Initialization Classical Method

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- Lecture 30 - Optimal interpolations
- Lecture 31 - A Bayesian Formation-3D-VAR methods
- Lecture 32 - Linear Stochastic Dynamics - Kalman Filter
- Lecture 33 - Linear Stochastic Dynamics - Kalman Filter (Continued...)
- Lecture 34 - Linear Stochastic Dynamics - Kalman Filter (Continued...)
- Lecture 35 - Covariance Square Root Filter
- Lecture 36 - Nonlinear Filtering
- Lecture 37 - Ensemble Reduced Rank Filter
- Lecture 38 - Basic nudging methods
- Lecture 39 - Deterministic predictability
- Lecture 40 - Predictability A stochastic view and Summary