Mid1 SMAI

- [x] Level 0
- [x] Linear Algebra
- [x] Basics
- [x] Linear Regression
- [x] Orthogonal Distance Minimisation - PCA
- [x] Gradient Descent
- [x] Normal Method
- [x] Perceptron
- [x] Logistic Regression
- [ ] Bayes Threorem
- [ ] Regularisation and SoftMax

- Generalised Gradient Descent
- Learning Rate Optimisation
- Newton's Updates [Optimised Update Rule]
- Proof that gradient Descent works

Level 0

- Pattern Recognition Flow Diagram (7+5)
- Gaussian distribution Formula

Linear Algebra

- L-Norm
- Span of set
- Linear Independence
- Rank of a matrix
- Basis, orthonormal Basis
- Eigen Values
- Eigen Vectors

Basics

- Regression
- Classification

- Discrimination Function
- Probabilistic approach to classification
- Multi-class Classification Problem

Regression

- Basics of Regression
- Error and Update Functions
- Derivation of Normal Form
- Pseudo Inverse of a Matrix and why its Needed
- PCA shit, and it’s derivation of XtX = Lambda

Linear Regression

- Cost/Error/Loss Function
- Hypothesis Function
- Update Function
- Learning Rate
- Learning Rate Update Function
- Theory

Logistic Regression

- Cost/Error/Loss Function
- Hypothesis Function
- Why not linear classifiers

Perceptron

- Discriminative Classifier
- Generative Classifier
- Probability based classification.
- The Perceptron Algorithm [net, sign, delta omega, omega]

Bayes’ Decision Theory

- Bayes’ Formula
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