**Concept Map**

Intelligence

Human way of

Representation

Processing

Machine learning

Pattern representation

REcognition

Compare

Introduction

Illustrative Application

Pattern recognition

Terminology

Review of probability and

Random process

Error criterion

Risk, Loss function

Bias-variance trade-off

Decision theory

Discriminant functions

Bayesean theory:

Maximum likelihood,

MAP

Fischer’s LDF:

Linearly separable vs

Inseparable classes

Experiential

learning

Learning

Virtual

lab

Demonstration

Supervised learning

Unsupervised

learning

Reinforcement

learning

Regression

Classification

Clustering:

Hierarchial

Iterative

K-means

Online

Component analysis:

PCA, NLCA, ICA

Neural

Networks

Learning laws

Error

Backpropagation

Network

Optimization

Deep networks

SVM:

Large margin

Optimization

Problem

Constrained vs

Unconstrained

Lagrangian

approach

Linear

Regression

Model

representaion

Cost function

Gradient descent

Logistic

Regression

Model

Cost function

Regularization