# Pattern Classification and Machine Learning FEN3202

# Discussion Agenda and Exercises for Lecture 9

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## I. DISCUSSION AGENDA

1) Sparse Kernel Machines Chapter 7 of the text book.

   Main Topic: Relevance Vector Machine (RVM)

   Discussion Points: Introduction to RVM (section 7.2)

   RVM for Regression (section 7.2.1), equation 7.76-7.91.

   Analysis of Sparsity (section 7.2.2)

1) Teaching format for the class

   First the teacher will start the class. We will recall some parts of chapter 2 and 3. Then we cover section 7.2.1.

   After break, Heydar will discuss section 7.2.2. He will also share his implementation experience of RVM.

## II. ASSIGNMENT

1) All students have to implement RVM. Heydar will provide the problem setup (as he did it before).
2) Discussion: Can we have a distributed RVM struture (for example using a distributed EM algorithm).
3) Discussion: Bayesian Compressive Sensing (BCS) Paper (Trans Signal Processing Paper; One Author: Lawrence Carin). All students implement the BCS.
4) Submission deadline for assignments: Two classes from now, that is 29th September.
5) Projects to one group: Developement of Block sparse model based BCS. The same group may also execute another new project on Bayesian Low Rank Matrix Reconstruction.