Machine Learning for Sensory Signals

Homework # 1
Due date: Feb 12, 2017

1. Show that

   (a)

   $$\frac{\partial}{\partial \mathbf{x}} \mathbf{x}^T \mathbf{A} \mathbf{x} = (\mathbf{A} + \mathbf{A}^T)\mathbf{x}$$

   (b)

   $$\frac{\partial}{\partial \mathbf{A}} tr(\mathbf{A}\mathbf{B}) = \mathbf{B}^T$$

2. Show that for the regression problem, the mean square error based estimate is the conditional expectation.

3. What are the different approaches to Machine learning in terms of classification settings. Enumerate the difference between Generative modeling and discriminative modeling.