

Homework:

- (1) What variables are solved in the support vector regression in dual form, and how are they used in the model prediction for new data samples?
- (2) Find the LSSVM model for the XOR problem, based on the choices of kernel

$$k(\mathbf{x}, \mathbf{x}_i) = \exp\left(-\frac{\|\mathbf{x} - \mathbf{x}_i\|^2}{2}\right)$$

- (3) Write a Matlab code to solve the LSSVM model for the XOR problem, based on the choices of kernel

$$k(\mathbf{x}, \mathbf{x}_i) = (1 + \mathbf{x}^T \mathbf{x}_i)^2,$$

and

$$k(\mathbf{x}, \mathbf{x}_i) = \exp\left(-\frac{\|\mathbf{x} - \mathbf{x}_i\|^2}{2}\right)$$

respectively

- (4) Write a Matlab code for LSSVM for regression model to model the static function $y = \text{sinc}(x) = \frac{\sin(x)}{x}$, using

$$k(x_i, x_j) = (1 + x_i x_j)^2 + (1 + x_i x_j)^3$$