

BIL101 LAB 5- Word Processing

$$L(\alpha) = \sum_{i=1}^n \alpha_i - \frac{1}{2} \sum_{i,j=1}^n \alpha_i \alpha_j y_i y_j (\mathbf{x}_i^T \mathbf{x}_j)$$

subject to : $\sum_{i=1}^n y_i \alpha_i = 0, \quad 0 \leq \alpha_i \leq \frac{C}{n}.$

LSVM Classification	Number of samples					# Samples	User's accuracy
	Vegetation	Shadow	Building	Open ground	Damage		
Vegetation	613	14	0	0	2	629	97.5
Shadow	2	424	0	0	16	442	95.9
Building	0	0	795	60	152	1007	78.9
Open ground	0	11	19	301	653	984	30.6
Damage	1	0	52	119	415	587	70.7
	616	449	866	480	1238	# Samples	
	99.5	94.4	91.8	62.7	33.5	Producer's accuracy	
					62.3	Kappa value	
					69.8	Overall accuracy	

Table 2.1: Commonly used types of kernel functions in the literature.

Kernel	$K(\mathbf{x}_i^T \mathbf{x}_j)$
Linear	$\mathbf{x}_i^T \mathbf{x}_j$
Radial Basis Function	$\exp(-\gamma \ \mathbf{x}_i - \mathbf{x}_j\ ^2), \gamma > 0$
Polynomial	$(\gamma \mathbf{x}_i^T \mathbf{x}_j + r)^d, \gamma > 0$
Sigmoid	$\tanh(\gamma \mathbf{x}_i^T \mathbf{x}_j + r)$
Multi quadratic	$\sqrt{\ \mathbf{x}_i - \mathbf{x}_j\ + \eta}^{1/2}$
Inverse multi quadratic	$\sqrt{\ \mathbf{x}_i - \mathbf{x}_j\ + \eta}^{-1/2}$

TABLE VI
CLASS-BY-CLASS ACCURACIES OBTAINED WITH THE SATIMAGE DATA SET

SATIMAGE DATASET CLASS DESCRIPTION	TOTAL NUMBER OF SAMPLES		METHOD					
	TRAINING	TESTING	CLASS BY CLASS ACCURACY [%]	MLC	NN-BP	RBF- SVM	BVDA	C-BVDA [f=10]
RED SOIL	1072	461		97.83	97.18	98.91	99.13	99.62
COTTON CROP	479	224		99.10	94.64	98.21	96.87	95.53
GRAY SOIL	961	397		95.21	91.68	92.94	91.43	94.45
DAMP GRAY SOIL	415	211		27.48	54.02	66.82	67.29	68.72
SOIL WITH STUBBLE	470	237		85.23	80.59	94.93	91.56	93.60
VERY DAMP GRAY SOIL	1038	470		85.74	84.46	90.85	86.38	90.42
TOTAL NUMBER OF SAMPLES	4435	2000	OA	85.7	86.3	91.9	90.1	92
			AA	85.7	87.2	91.75	89.9	91.95