**Centre for ARTIFICIAL INTELLLIGENCE  
TKM COLLEGE OF ENGINEERING, Kollam**

**Semester II**

**Advanced Computing Lab**

**TUTORIAL QUESTION: SET 2 (25.05.21)**

**Instructions**

1. Visit <https://scikit-learn.org/stable/modules/generated/sklearn.svm.SVC.html>
2. Prepare & add solutions next to questions.
3. Save your file name like: ebin\_lab\_tutorial\_2.docx & attach back in ETlab.
4. Be ready to attend Viva (SVM & Following questions) in the next lab hour.

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1. Study and present (your own points) relevance of various parameters available in sklearn - SVC function.

Solution:

**C – Regularization parameter:**

The regularization parameter (lambda) serves as a degree of importance that is given to misclassifications. As lambda grows larger the less the wrongly classified examples are allowed. Then when lambda tends to infinite the solution tends to the hard-margin (allow no miss-classification). When lambda tends to 0 (without being 0) the more the miss-classifications are allowed.

**Kernel**

The function of a kernel is to require data as input and transform it into the desired form. Different SVM algorithms use differing kinds of kernel functions. These functions are of different kinds—for instance, linear, nonlinear, polynomial, radial basis function (RBF), and sigmoid.

The most preferred kind of kernel function is RBF. Because it's localized and has a finite response along the complete x-axis.

**Degree**

Degree of the polynomial kernel function (‘poly’). Ignored by all other kernels. The **polynomial kernel** of **degree** 1 leads to a linear separation (A). Higher-**degree polynomial kernels** allow a more flexible decision boundary (B,C).

1. Study and prepare a NOTE (Intro/Definition -2/3 lines, Over-coming any problems? –1/2 lines, Advantages, Disadvantages, Applications, Equation if any) separately on LINEAR, POLY, RBF, SIGMOID kernels.

Solution:

Linear: ……..

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---Happy Learning--