***Assessed Coursework 1 Report***

***Support Vector Machines***

*Group 1*

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***Introduction***

For this lab we choose data set Iris and Wine Quality…

***Task 1: Train SVMs with the linear kernel***

Findings

***Task 2: Train SVMs with Gaussian RBF and Polynomial kernels***

Each model we trained

***Task3: Method Evaluation***

Linear:

Gaussian:

Polynomial kernels:

Classification rate

RMSE

***Task4: Additional Questions***

**Question 1:** What does the kernel parameter of the Gaussian RBF kernel signify (sigma)? What happens when you increase its value?

**Answer:**

**Question 2:** Explain what happens when a hard-margin SVM is fit to a dataset of two classes with overlapping features. What value do you need to set C (the slack-variable hyper-parameter) to attain a hard-margin SVM?

**Answer:**

**Question 3:** Explain why do you need to use both inner cross-validation and an outer k- fold cross-validation (known as nested cross-validation) in the machine learning process?

**Answer:**

***3. Conclusion***