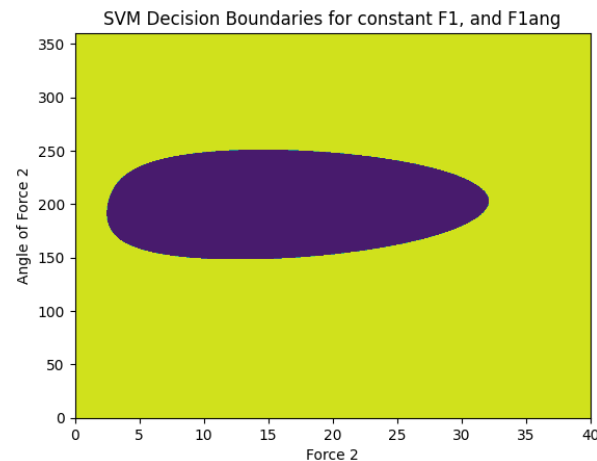


Machine Learning Coursework 3

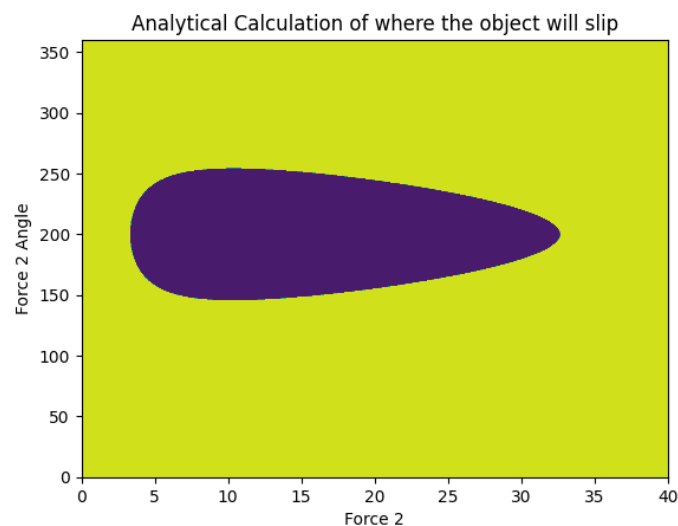
A.



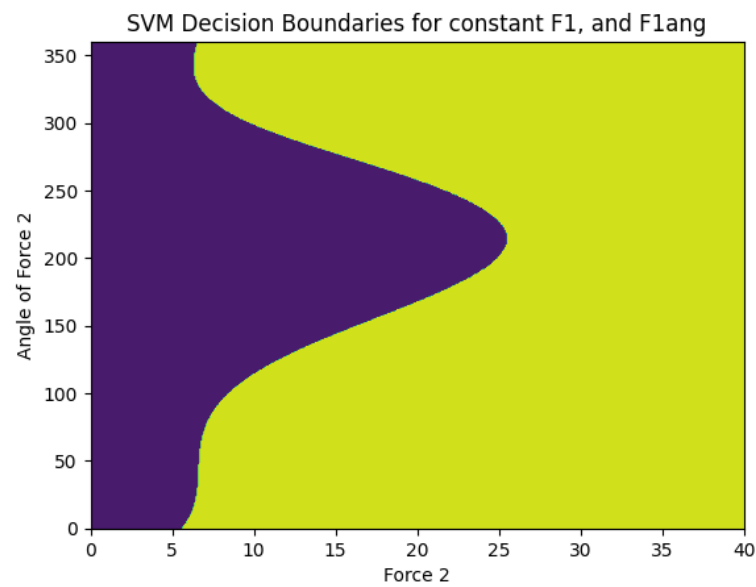
B.

1. In this situation the object either slips or it does not. Hence the expected solution is a discrete value, SVM provide this hard decision boundary. It also works well for small data sets and NN would provide a soft boundary.
2. Using ML will incorporate factors that would not be modelled in the analytical equations, such as uneven mass distribution, varying surface roughness all of which could potentially result in better predictions.
3. Using ML you have to provide the model with training data, often you might want to predict the outcome without having to run experiments in the first place.

C. Analytical calculating the object slip fits very closely with the SVM approach.



- D. Plotting the Decision function with $F_1=10$ and $F_{1ang}=30$ held constant.



- E. This is necessary as slip is now a function of four variables rather than two, hence the problems complexity grows and so does the associated training data size requirements.