

Lesson Plan/Unit Plan	
Name: Laurence Liss	Unit: Big Data/Algorithm Application
Subject/Course: JavaScript/Algorithms	Grade Level: College
Preparation Time: 1 hour	Estimated Length: 2.5 hours
Desired Results	
Objectives - Students will be able to: <i>Summarize the usage and relevance of machine learning algorithms such as SVM and kmeans and explain how they relate to predictive computer programs.</i>	
Standards Addressed: NA	
Social Impact/Relevance (Anticipatory Set): Using computers to make predictions in a given problem space is essential in allowing expert knowledge to scale. For instance, in the field of cancer diagnosis, prediction is generally made by a human expert after reviewing a tissue sample (histological slide) and assessing the relative arrangements of tissue structures such as cell nuclei. Creating computer algorithms that can rate probabilities based on a digital version of the same slide can reduce the burden on high level expert staff the time necessary to diagnose cancer by allowing experts to focus only images with high probability or ambiguous structures. In resource restricted environments, this could also allow a few experts to treat many more patients.	
Assessment Evidence	
Performance Tasks: <i>Students will engage in classroom discussion and submit a written discussion about problems that can be solved using machine learning.</i>	Other Evidence - Summative and/or Formative: <i>Students will take a quiz on basic machine learning concepts.</i>
Lesson Activity/Outline: The lesson will begin with an overview of separating data. Students will see data sets that can be split using lines on a cartesian plane. This will lead to a discussion of the ideas of supervised vs unsupervised learning and a the workings of kmeans and SVM algorithms.  Using a pre-created dataset of movies, students will rate movies that they have seen as “liked” or “disliked”. This will create a training data set that can be fed to a pre-created program used to make predictions about other movies that the student might like or dislike. Students will select a list of 10 movies they have seen to test the program’s accuracy. As students rate more movies, the program should increase in accuracy. Thus they will begin to understand the concepts of training sets, testing sets, and prediction as well as the importance of having large data sets when working with machine learning algorithms.	
Closure: Written lab report, quiz, discussion submissions.	



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Teacher Reflection Notes:

Can also work well in an online setting particularly if the program can be converted to a web based application.

Modifications, accommodations:

With proper data sets this could be adjusted to work with music, books or other media.