



# Support Vector Machines

---

Sravani Vadlamani

# Schedule

Date	Topic
April 5	SVM – Maximal Margin Classifier, Support Vector Classifier, Kernels, SVMs
April 7	Multiclass SVM and Relationship with Logistic Regression
April 12	Principal Component Analysis, Examples and Applications
April 14	Clustering Methods, K-means algorithm
April 19	Hierarchical Clustering, Examples and Applications
April 21	Introduction to Deep Learning
April 26	Final Exam in Class
May 5 ( 8 – 10 AM IST 1017)	Final Project Presentations

# Final Project - Deadlines

Date	Deliverable
March 22	Project Proposal Due
April 3	Exploratory Data Analysis
April 10	Analysis/Results
April 17	Draft Final Report
April 27	Final Report Due
April 27	Final Presentation Due

# Support Vector Machines

- Agenda
  - What is Hyperplane?
  - Maximal Margin Classifier
  - Support Vector Classifiers
  - Support Vector Machines
  - SVMs with more than two classes
  - SVM vs Logistic Regression

# Support Vector Machines

- A classification technique developed in the 1900s. Typically used for Two class classification
- A generalization of simple and intuitive classifier called the maximal margin classifier that can be applied to only classes separated by a linear boundary
- Support vector classifiers extend the application of maximal margin classifier to non-separable cases
- Support vector machines extend the support vector classifiers to accommodate non-linear class boundaries
- SVMs are originally intended for binary classification but can be extended to handle more than two classes

# Support Vector Machines – Easily Explained

- SVM in 2 Minutes
  - [https://www.youtube.com/watch?v= YPScrckx28](https://www.youtube.com/watch?v=YPScrckx28)
- No Math SVM
  - <https://www.youtube.com/watch?v=efR1C6CvhmE>

# Support Vector Machines – Math

- See the textbook slides