ZHEJIANG UNIVERSITY

School of Mathematical Sciences

Statistical Learning, Spring and Summer Term 2020

Instructor: Peng Zhang (pengz@zju.edu.cn),
Office: Ouyang Building 305,
Phone: 18667005470.

Time and Place: Monday 6-8, Western Zone Building 2 310.

Textbook:

An Introduction to Statistical Learning with Applications in R. Gareth James, Daniela Witten, Trevor Hastie and Robert Tibshirani, Springer 2013.

Elements of Statistical Learning. (2nd Ed.) Trevor Hastie, Robert Tibshirani and Jerome Friedman, Springer 2009.

Evaluation: The final grade will be based on the following:

5 assignments (20%), a final team project (30%), and final exam (50%).

Course Outline: Tentative topics include:

- Regression: linear, ridge, lasso, logistic, polynomial splines, smoothing splines, kernel methods, additive models, regression trees, projection pursuit, neural networks
- Classification: logistic regression, linear discriminant analysis, generalized additive models, kernel methods, naive Bayes, classification trees, support vector machines, neural networks, K-means, K-nearest neighbours, random forests
- Model Selection and Averaging: AIC, cross-validation, test error, training error, bootstrap aggregation
- Unsupervised learning: K-means clustering, K-nearest neighbours, hierarchical clustering
- Other topics: Deep learning, recommender system.

Software: R