Lecture 09:
Sayan Mukherjee and Alex Rakhlin

Description

Necessary and sufficient requirements for uniform convergence for both real-valued loss functions and classification are introduced. VC entropy, VC dimension, empirical covering numbers, and V-gamma dimension are introduced and explained.

Suggested Reading

- N. Alon, S. Ben-David, N. Cesa-Bianchi, and D. Haussler **Scale-sensitive Dimensions, Uniform Convergence, and Learnability.** Journal of the ACM, 44(4):615-631, 1997.
- V. N. Vapnik. **The Nature of Statistical Learning Theory.** Springer, 1995.
- Cucker and Smale. **On the mathematical foundations of learning.** Bulletin of the American Mathematical Society, 2002.
- V. N. Vapnik and A. Ya. Chervonenkis. **Necessary and Sufficient conditions for the uniform convergence of the means to their expectations.** Probability Theory and Its Applications,26, 532-553 1981.