MATHIEU BAZINET, Université Laval

Introduction to PAC-Bayes theory and its applications

Introduced in 1998 by David A. McAllester, PAC-Bayes theory has found an important place in the field of statistical learning theory. Given a stochastic predictor or a majority vote, PAC-Bayes provides high-probability tail bounds on the true risk of the model. The seminal works of Dziugaite and Roy (2017) and Pérez-Ortiz et al. (2021) demonstrated that it was possible to achieve tight generalization bounds for deep neural networks. This talk aims to be an introduction to PAC-Bayes theory, starting from the basic definitions and building up to the proof of a PAC-Bayesian bound. We will finish this talk with some applications of this framework.