

Active Set Methods with Applications to Machine Learning

Abstract: In this talk, we focus on a group of mathematical programming problems encountered in machine learning applications such as speech recognition, image processing, and text classification. These problems are typically large scale and nonlinear; however, they generally have special mathematical structures. We discuss how problem structure can be exploited, and tools from large scale optimization can be adapted to design efficient algorithms to solve these problems. Then, we switch our emphasis to the use of computational resources, and discuss strategies for the design of parallel algorithms. Our focus on parallel optimization is motivated by tensor factorization problems. To this end, we shall also introduce our design for a hybrid parallel architecture.