1 Matrix Optimization in Statistics

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Statisticians have been dealing with matrix optimization problems which similar to Matrix Antieigenvalue problems. These problems occur in areas such as statistical efficiency and canonical correlations. Statisticians have generally took a variational approach to treat these matrix optimization problems. However, we will use the techniques we have developed for computation of Antieigenvalues to provide simpler solutions. Additionally, these techniques have enabled us to generalize some of the matrix optimization problems in statistics from positive matrices to normal accretive matrices and operators. One the techniques we use is a Two Nonzero Component Lema which is first proved by the author. Another technique is converting the Antieigenvalue problem to a convex programming problem. In the latter method the problem is reduced to finding the minimum of a convex function on the numerical range of an operator (which is a convex set).