# Analysis of SVM with Indefinite Kernels

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### SVM classification with non-positive semi-definite (indefinite) kernel (min-max problem) [Luss & d'Aspremont, NIPS'07]

- Approximate approaches (smoothing techniques) PGM and ACCPM [Luss & d'Aspremont, NIPS'07]
- Semi-infinite quadratically constrained linear programming (SIQCLP) [Chen & Ye, ICML'08]

### Our Contribution

- We prove that the objective function is, indeed, differentiable with *Lipschitz continuous gradient*
- We successfully apply Nesterov's smoothing optimization approach to efficiently solve SVM with indefinite kernels