

PROPOSITIONS

accompanying the dissertation

Algorithms for Multiclass Classification and Regularized Regression

by

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- I. Classification performance of multiclass support vector machines is improved by using a more flexible loss function. (Chapter 2)
- II. The predictive performance of the One-vs-Rest SVM has been consistently overstated due to insufficiently rigorous experimental designs. (Chapter 2)
- III. Accurate estimates of the Bayes error rate can be used to improve hierarchical classifier design. (Chapter 3)
- IV. Smoothed l_0 -regularized regression using SparseStep performs at least as well as commonly used alternatives. (Chapter 4)
- V. Continuation methods provide a feasible approach to solving non-convex regularized regression problems. (Chapter 5)
- VI. Assessing classifier performance becomes less meaningful as the number of alternatives increases.
- VII. Machine learning methods should not only be evaluated on performance and computation time, but also on how they improve the understanding of a particular problem or technique.
- VIII. Existing incentives for academia are not properly aligned with the long term best interest of society.
- IX. Reliance on a single planet provides insufficient redundancy for the continued existence of humanity.
- X. Artificial general intelligence will be mankind's last invention.
- XI. The first time you submit a job to a compute cluster it will contain a mistake, even when you consider Proposition XI. (After Hofstadter's Law)