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)