

PML Wildcard

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May 07, 2024

My wildcard projects include a few different directions. In one, attempted to write a neural network from scratch to familiarize myself with the details of doing so.

In another, I included the deliberate overfitting exercise from the previous semester.

I also attempted to optimize hyperparameters for t-distributed stochastic neighbor embeddings (TSNE), a dimensionality reduction approach to visualize high-dimensional data. t-SNE relies on a number of hyperparameters, including perplexity, early exaggeration, and specification of distance metrics. Furthermore, since t-SNE attempts to minimize the Kullback-Leibler divergence between the joint probabilities of the low-dimensional embedding and the high-dimensional data, t-SNE hyperparameter optimization can be formulated as any other optimization/minimization problem. I worked to complete an optimization of t-SNE on the wine quality dataset, but was not entirely successful. In the future, I would likely employ a Bayesian optimization approach with a custom scoring function for the Kullback-Leibler divergence calculations to achieve this goal.