CS7641 Assignment 1 — Supervised Learning

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Abstract

Machine learning is a technology that is often publicly misunderstood, both narrower in the problem spaces that it can address and broader in the variety and completeness with which it addresses them. Technologists often espouse that machine learning can acheive anything and solve any problem. This is not the case. And, agents often require a careful guiding human hand to come to useful conclusions. This belies the complete ability of machine learning to solve certain subclasses of problems to a degree that the same technologists can rarely imagine. In this paper, I explore this duality by applying supervised learning algorithms to two interesting problem spaces.

Introduction

In order to explore these problems, I need a working implementation of various machine learning algorithms. My background in python and some amount of internet searching lead me to scikit-learn [2]. This library implements decision trees, neural networks, gradient-descent boosting, support vector machines, k-nearest neighbors, and a number of other algorithms that will not be used in this paper. Plotly [1] will be used to generate graphs because it has the shortest URL.

References

[1] Plotly Technologies Inc. *Collaborative data science*. 2015. URL: https://plot.ly.

[2] F. Pedregosa et al. "Scikit-learn: Machine Learning in Python". In: *Journal of Machine Learning Research* 12 (2011), pp. 2825–2830.