R Noah Padilla

10/22/2020

Multi-Layer Perceptions Exercise 1 Report

In this exercise, I used previous knowledge from the last exercise in which modifications were made to both the mlp_classifier and the mlp_regressor by modifying/adding smaller batch sizes, an adaptive learning_rate, and momentum to the model. Although I made these changes, I did not modify the learning rate of .001 because it's a good default number and the number of hidden layers would have a more drastic effect. Also, I tested with different number of hidden layers ranging from 100-400. The results are shown below.

MLP Classifier

Presets: Learning_rate='adaptive' | learning_rate_init = .001

	Batch Size	Momentum	Hidden Layer Size	Total Iterations	Time Training	Time Testing	Accuracy
Test 1	100	.95	100	50	**102.210032**	**0.054974**	**0.978143**
Test 2	100	.95	200	30	**175.739619**	**0.054974**	**0.982000**
Test 3	100	.95	300	34	**268.297941**	**0.070966**	**0.984857**
Test 4	100	.95	400	37	**384.568501**	**0.103951**	**0.983571**

MLP Regressor

Presets: Learning_rate='adaptive' | learning_rate_init = .001

	Batch Size	Momentum	Hidden Layer Size	Total Iterations	Time Training	Time Testing	MSE
Test 1	100	.95	100	13	**147.796397**	**0.317493**	**0.038314**
Test 2	100	.95	200	13	**219.011689**	**0.594988**	**0.038906**
Test 3	100	.95	300	13	**263.495593**	**0.878580**	**0.038448**

MSE was not going down going down by much so I didn't test more than 3 times. Even though there are many more combinations of parameter modifications I was having trouble trying to find a structure to efficiently test parameter modifications.