

Deep Learning from Scratch

Theory + Practical

Mini Batch gradient descent

Mini-batch gradient descent is a variation of the gradient descent algorithm that splits the training dataset into small batches that are used to calculate model error and update model coefficients. Implementations may choose to sum the gradient over the mini-batch which further reduces the variance of the gradient.

Mini-batch gradient descent seeks to find a balance between the robustness of stochastic gradient descent and the efficiency of batch gradient descent. It is the most common implementation of gradient descent used in the field of deep learning.

Mini Batch gradient descent

car_ID	symboling	CarName	fueltype	aspiration	doornumber	carbbody	drivewheel	engine	location	wheelbase	carlength	carwidth	carheight	curbweight
1	3	alfa-romero	gas	std	two	convertible	rwd	front		88.6	168.8	64.1	48.8	2548
2	3	alfa-romero	gas	std	two	convertible	rwd	front		88.6	168.8	64.1	48.8	2548
3	1	alfa-romero	gas	std	two	hatchback	rwd	front		94.5	171.2	65.5	52.4	2823
4	2	audi 100 ls	gas	std	four	sedan	fwd	front		99.8	176.6	66.2	54.3	2337
5	2	audi 100ls	gas	std	four	sedan	4wd	front		99.4	176.6	66.4	54.3	2824
6	2	audi fox	gas	std	two	sedan	fwd	front		99.8	177.3	66.3	53.1	2507
7	1	audi 100ls	gas	std	four	sedan	fwd	front		105.8	192.7	71.4	55.7	2844
8	1	audi 5000	gas	std	four	wagon	fwd	front		105.8	192.7	71.4	55.7	2954
9	1	audi 4000	gas	turbo	four	sedan	fwd	front		105.8	192.7	71.4	55.9	3086
10	0	audi 5000s (gas	turbo	two	hatchback	4wd	front		99.5	178.2	67.9	52	3053
11	2	bmw 320i	gas	std	two	sedan	rwd	front		101.2	176.8	64.8	54.3	2395
12	0	bmw 320i	gas	std	four	sedan	rwd	front		101.2	176.8	64.8	54.3	2395
13	0	bmw x1	gas	std	two	sedan	rwd	front		101.2	176.8	64.8	54.3	2710
14	0	bmw x3	gas	std	four	sedan	rwd	front		101.2	176.8	64.8	54.3	2765
15	1	bmw z4	gas	std	four	sedan	rwd	front		103.5	189	66.9	55.7	3055
16	0	bmw x4	gas	std	four	sedan	rwd	front		103.5	189	66.9	55.7	3230
17	0	bmw x5	gas	std	two	sedan	rwd	front		103.5	193.8	67.9	53.7	3380
18	0	bmw x3	gas	std	four	sedan	rwd	front		110	197	70.9	56.3	3505

BGD

SGD

MBGD

Thank You!