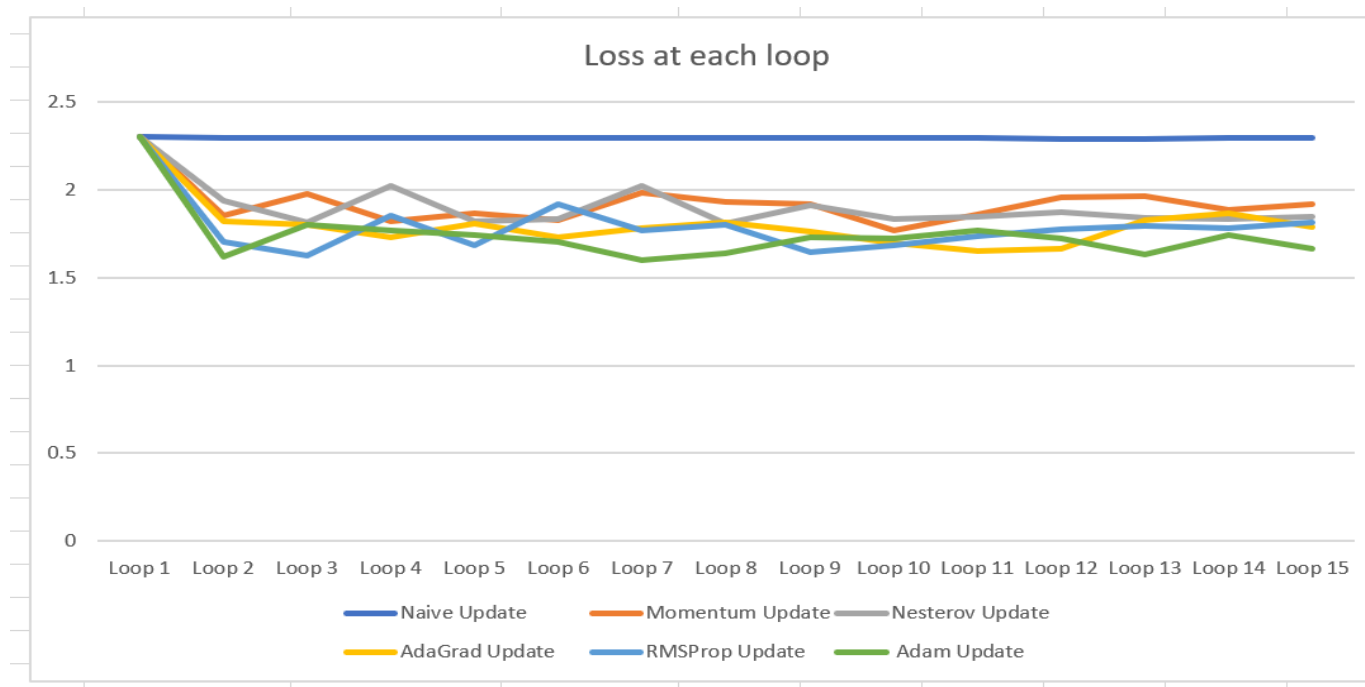


Comparison of various update functions:



Adam algorithm which looks same as RMS prop gives us best performance. Adam is currently recommended as default update function and used widely.

Loop Number	Naive Update	Momentum Update	Nesterov Update	AdaGrad Update	RMSProp Update	Adam Update
1	2.302588983	2.302586298	2.302576957	2.302573567	2.302583716	2.302569654
2	2.293130153	1.851602302	1.94060956	1.823847222	1.702427222	1.616629641
3	2.295120739	1.97802835	1.812097073	1.803580426	1.623269408	1.798687408
4	2.294891754	1.818453978	2.020723089	1.728795208	1.851960776	1.770763401
5	2.293350841	1.864067059	1.82184239	1.810239671	1.68250462	1.744467699
6	2.293681922	1.826861691	1.831110349	1.727661705	1.917920767	1.702297663
7	2.293223577	1.98535984	2.02170701	1.781664011	1.765671083	1.596210213
8	2.296293383	1.932881042	1.80804893	1.813834893	1.803655032	1.636447789
9	2.296315462	1.92043682	1.908957332	1.763125648	1.646628022	1.728328445
10	2.293758381	1.767830646	1.835376871	1.699819588	1.681523701	1.721196186
11	2.298825636	1.862255597	1.844029391	1.653667138	1.734203277	1.767170074
12	2.291618849	1.955724248	1.875733551	1.663761996	1.773911666	1.720930914
13	2.290929148	1.962687019	1.842029151	1.829551107	1.795315177	1.633684854
14	2.29362841	1.884199989	1.83575992	1.867345895	1.779952841	1.741830195
15	2.294316355	1.920822912	1.84450721	1.789085588	1.814149718	1.664900368