## **Epochs and Steps**

What is an epoch and what is a step?

1. Let us go over the definitions of an epoch and a step
   1. 1 epoch = one pass over the entire data
   2. 1 step = one update of the parameters
   3. N = number of data points
   4. B = mini-batch size
2. Let’s analyse the algorithms using epochs and steps

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| Algorithm | Number of steps in one epoch |
| Batch Gradient Descent | 1 |
| Stochastic Gradient Descent | N |
| Mini-Batch Gradient Descent | N/B |

1. Let’s look at stochastic version of NAG and Momentum based GD

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| Stochastic Momentum GD | Stochastic NAG |
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1. Since there is a history component, NAG and Momentum GD have slightly smoother oscillations.