Gradient Descent

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Gradient Descent is an iterative optimization algorithm used to find the local minimum of a differentiable function.

Ex → guess the marks of the test

Marks = 80%

New value = 80 - 5 = 75 %

New value = 75 - 5 = 70 %

New value = old value - step size

step size = LR x Slope

New value = o.v − LR x Slope

Ex = $f(x) = x^2$

$f'(x) = 2x$

Error = 5

$\alpha = 0.1$

step ①

ov = 5

$$f'(5) = 2 \times 5 = 10$$

$$x_1 = 5 - 0.1 \times 10$$

$$= 5 - 1$$

$$x_1 = 4$$

Step (2)-

$$x_1 = 4$$

$$f'(x_1) = 2 \times 4 = 8$$

$$x_2 = 4 - 0.1 \times 8$$

$$= 4 - 0.8$$

$$= 3.2$$

Step (3)-

$$x_2 = 3.2$$

$$f'(x_2) = 2 \times 3.2 = 6.4$$

$$x_3 = 3.2 \times 0.1 \times 6.4$$

$$= 3.2 - 0.64$$

$$= 2.56$$