

Symbols	Meanings
i, j, l	the counter variables
k	the number of sampled instances in SAMPLEVR
s	the counter of epochs
t	the counter of iterations in an epoch
i_t	the index of an instance $\langle x_{i_t}, y_{i_t} \rangle$ which is sampled randomly
α	the level of significance which is set to be 0.01 in the paper.
ρ	$[-\rho, \rho]$ is the $(1-\alpha)$ -confidence interval
δ	the rate of convergence
p	the number of dimensions
$\omega, \tilde{\omega}, \omega_*$	ω is a parameter, and $\tilde{\omega}$ is its snapshot. ω_* is the optimum.
d, d_t	the variance, $d_t = \ \omega_t - \tilde{\omega}_t\ ^2$
a_{ij}	the j_{th} entry of d_i
b_{ij}	the j_{th} entry of $\nabla f_i(\omega)$
$\gamma_t, \dot{\gamma}_t$	the update gradient, and $\dot{\gamma}_t$ is its estimation.
m_s, m	the epoch size, and m is a constant.
η	the constant learning rate
ϵ, ζ	the positive real numbers
$\ \cdot\ $	the 2-norm of a vector
\mathbb{E}	the expectation
g, \dot{g}	the full gradient g and its estimation \dot{g}
ν	$\nu = \dot{g} - g$