

Table 1: Table of Notation conventions

type	description	common example
optimization variable (scalar)	lower-case letter	$x, y$
optimization variable (vector)	lower-case letter with <code>\vec</code>	$\vec{x}, \vec{y}$
optimization variable (matrix)	upper-case letter	$A, B$
element	subscript	$x_i, A_{ij}$
column vector	comma separated parentheses tuple	$(1, 2, 3)$
row vector	space separated square bracket list	$(1, 2, 3) = [1 \ 2 \ 3]^\top$
random variable	upper-case letter	$X, Y$
random variable vector	upper-case letter with <code>\vec</code>	$\vec{X}, \vec{Y}$
common set	upper-case letter with <code>\mathbb</code>	$\mathbb{R}, \mathbb{Z}$
set	upper-case letter with <code>\mathcal</code>	$\mathcal{S}, \mathcal{T}$
function	lower-case letter	$f, g : \mathbb{R}^n \rightarrow \mathbb{R}^m$
online algorithm	<i>mathrsfs</i> : <code>\mathscr</code>	$\mathcal{A}$
regret	<code>\mathfrak</code>	$\mathfrak{R}$
competitive ratio		$\pi$
dual variables		$\lambda, \mu$
dual function		$D(\lambda)$
Lagrangian function		$\mathcal{L}$
step size		$\alpha, \beta$
integer interval		$[N] = \{1, 2, \dots, N\}$