

$\mathbb{R}$	The set of real numbers.
$\mathbf{a}, \mathbf{b}, \dots$	Vectors over the reals, <i>i.e.</i> $\mathbf{a} \in \mathbb{R}^m$ .
$\mathbf{A}, \mathbf{B}, \dots$	Matrices over the reals, <i>i.e.</i> $\mathbf{A} \in \mathbb{R}^{m \times n}$ .
$[\mathbf{a}; \mathbf{b}]$	Vector concatenation, $\mathbf{a} \in \mathbb{R}^m$ and $\mathbf{b} \in \mathbb{R}^n$ , $[\mathbf{a}; \mathbf{b}] \in \mathbb{R}^{m+n}$ .
$[\mathbf{a}, \mathbf{b}]$	Vertical vector stacking, $\mathbf{a}, \mathbf{b} \in \mathbb{R}^m$ , $[\mathbf{a}, \mathbf{b}] \in \mathbb{R}^{m \times 2}$ .
$\mathcal{X}$	Finite vocabulary of words $x$ .
$\mathcal{Y}(x)$	Finite set of trees $y$ that are compatible with $x$ .
$X, Y, \dots$	Random variables with sample spaces $\mathcal{X}, \mathcal{Y}, \dots$
$x$	A word from vocabulary $\mathcal{X}$ , an outcome of random variable $X$ .
$y$	A tree from $\mathcal{Y}(x)$ , an outcome of random variable $Y$ .
$x_1^m, x$	A sequence of words $\langle x_1, \dots, x_m \rangle$ from $\mathcal{X}^m$ (shorthand: $x$ ), the outcome of the sequence of random variables $X_1, X_2, \dots, X_m$ .
$x_{<j}$	The sequence $x_1^{j-1}$ , the part of sequence $x_1^m$ preceding word $x_j$ .
$P_X, P_{Y X}, P_{X,Y}$	Discrete probability distributions of random variable $X$ , conditional $X Y$ and joint $X, Y$
$p_X, p_{Y X}, p_{Y X}$	Probability mass functions of distributions $P_X, P_{Y X}$ , and $P_{X,Y}$ .
$p(x), p(y   x), p(x, y)$	Shorthands for probabilities $P_X(X = x)$ , $P_{X Y}(Y = y   X = x)$ , and $P_{X,Y}(X = x, Y = y)$ .
$p_\theta, q_\lambda$	Probability mass functions with emphasis on the parameters that specify them, and with random variables clear from context.
$\mathbb{E}[g(X)]$	Expectation of $g(X)$ with respect to distribution $P$ , for some function $g : \mathbb{R} \rightarrow \mathbb{R}$ .
$H(P_X)$	Entropy of random variable $X$ with distribution $P$
$\Lambda$	Finite set of nonterminal labels in a context-free grammar.
$A, B, C, \dots$	Nonterminal labels from $\Lambda$ .
$S^\dagger$	Special root label not in $\Lambda$ .