

\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> $\mathbf{A} \in \mathbb{R}^{m \times n}$.
$[\mathbf{a}]_i$	Vector indexing, $[\mathbf{a}]_i \in \mathbb{R}$ for $1 \leq i \leq m$.
$[\mathbf{a}; \mathbf{b}]$	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 .
$x_{<i}$	The sequence x_1^{i-1} , the part of sequence x_1^m preceding word x_i .
$P_X, P_{Y X}, P_{X,Y}$	Discrete probability distributions of random variables 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_θ, q_λ	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
Λ	Finite set of nonterminal labels in a context-free grammar.
A, B, C, \dots	Nonterminal labels from Λ .
S^\dagger	Special root label not in Λ .