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Minimum Description Length Model Selection

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Notation

Numbers

$\lfloor x \rfloor$	The value of x , rounded down to the nearest integer
$\lceil x \rceil$	The value of x , rounded up to the nearest integer
$\log x$	The binary logarithm of x
$\ln x$	The natural logarithm of x
$\mathbf{1}_A(x)$	The indicator function, which equals 1 if $x \in A$ and 0 otherwise

Sets

\mathbb{B}	Binary numbers 0 and 1	(Note: in Chapter 6, the
\mathbb{N}	Natural numbers $0, 1, 2, \dots$	blackboard symbols are used
\mathbb{Z}	Integers $\dots, -2, -1, 0, 1, 2, \dots$	for something else)
\mathbb{Z}^+	Positive integers $1, 2, \dots$	
$ \mathcal{X} $	The size of a finite set \mathcal{X}	
$[n]$	Abbreviation for $\{1, 2, \dots, n\}$, with $[0] = \emptyset$ and $[\infty] = \mathbb{Z}^+$	

Sequences. Let $n \in \mathbb{N}$ and let \mathcal{X} be a countable set.

\mathcal{X}^n	The set of all length n sequences of elements from \mathcal{X}
\mathcal{X}^*	The set of all finite sequences of elements from \mathcal{X} : $\mathcal{X}^* := \cup_{n \in \mathbb{N}} \mathcal{X}^n$
\mathcal{X}^∞	The set of all infinite sequences of elements from \mathcal{X}
x^n	EITHER exponentiation, OR the sequence x_1, x_2, \dots, x_n for $n \in \mathbb{N}$
x^0 / ϵ	The empty sequence

Asymptotics. Let $a, c, x_0, x \in \mathbb{R}$.

$f \rightarrow a$	$\lim_{x \rightarrow \infty} f(x) = a$
$f = O(g)$	$\exists x_0, c > 0 : \forall x \geq x_0 : f(x) \leq c g(x) $
$f = \Omega(g)$	$\exists x_0, c > 0 : \forall x \geq x_0 : f(x) \geq c g(x) $ (Not the complement of o !)
$f = \Theta(g)$	$f = O(g)$ and $f = \Omega(g)$
$f \asymp g$	The same as $f = \Theta(g)$
$f = o(g)$	$f(x)/g(x) \rightarrow 0$