Notes on Tree Construction

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December 30, 2023

Notation

The **Maximum-Entropy Sampling Problem** is defined by the following mathematical program:

$$z(C, s) := \max \left\{ \mathbf{ldet}\, C[S, S] : S \subset N, |S| = s \right\}$$

- Let $\mathcal{L}$ be the list of open

- $\mathbf{ub}L \equiv \mathbf{ub}(L)$ be the value of a selected upper-bounding method applied to $L \in \mathcal{L}$

- $z^{UB} = \max \{\}$

Algorithm 1: Solve Tree

Data: given approximate optimal value $\hat{z}$; solution tolerance, **tol**
$\in \mathbf{R}$, timeout $\in \mathbf{R}$

$z^{LB} = \hat{z} - \text{tol}; \; k = 0, d_0 = 1, C = 0;$

for $k = 0, 1, 2, \dots$ **do**
    $C = C + d_k C(\alpha_k)$
    $n_k = |D(\alpha_k)|;$
    if $n_k = 0$ **then**
        return C;
    else
        choose α_{k+1} at random from $D(\alpha_k)$
        $d_{k+1} = d_k n_k;$
    end
end