procedure FIND-BEST-SPLIT($S = \{\mathbf{x}_i, y_i\}_{i=1}^{n}$)
    bestloss $\leftarrow \infty$
    feature $\leftarrow \infty$
    cut $\leftarrow \infty$
    for $f = [0, \ldots, d-1]$ **do**
        sortIdx $\leftarrow$ argsort($[\mathbf{x}]_f$) ▷ Sort $\mathbf{x}, y$ along feature f
        $\mathbf{x}', y' \leftarrow \mathbf{x}$[sortIdx], y[sortIdx]

        for $i = [0, \ldots, n-1]$ **do** ▷ Loop over the sorted data points for cut values
            if $\mathbf{x}'_{i,f} \neq \mathbf{x}'_{i+1,f}$ **then**
                $t \leftarrow \left(\mathbf{x}'_{i,f} + \mathbf{x}'_{i+1,f}\right)/2$
                ▷ Since $\mathbf{x}'$ is sorted along feature f, $\mathbf{x}'_{j,f} \leq t$ for all $j < i+1$ and $\mathbf{x}'_{j,f} > t$ for all $j \geq i+1$
                $S_L = \{\left(\mathbf{x}'_j, y'_j\right) : j < i+1\}$
                $S_R = \{\left(\mathbf{x}'_j, y'_j\right) : j \geq i+1\}$
                $I(S) \leftarrow I\left(S_L\right) + I\left(S_R\right)$

                if $I(S) <$ bestloss **then** ▷ Cut along feature f at value t reduces impurity further
                    feature $\leftarrow f$
                    cut $\leftarrow t$
                    bestloss $\leftarrow I(S)$
                end if
            end if
        end for
    end for