RF Parameters: Individual Trees
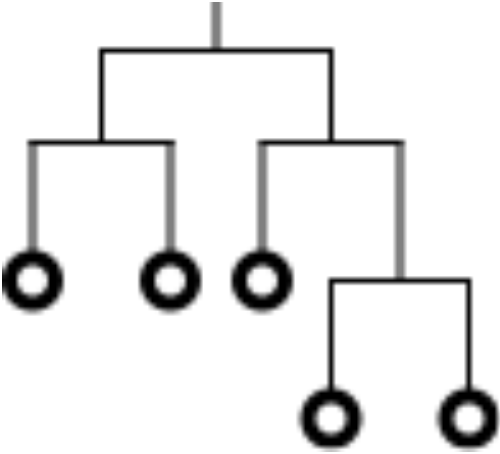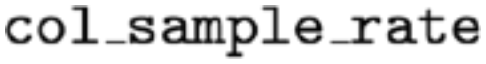
- **Column sampling for split:**

- **mtries:** number of columns to sample on each split

  (default: sqrt(n) for classification, n/3 for regression)

- **col_sample_rate_change_per_level:** factor by which to increase or decrease mtries per level of tree

`col_sample_rate`

$$\alpha \times \texttt{col\_sample\_rate}$$

$$\alpha^2 \times \texttt{col\_sample\_rate}$$

$\alpha = \texttt{col\_sample\_rate\_change\_per\_level} \ (0 \leq \alpha \leq 2)$

For level n: $\alpha^{n-1} \times$ `col_sample_rate`

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- **Column sampling for split:**
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- **When to stop splitting?**
- **max_depth:** maximum depth of each tree
- **min_rows:** minimum rows in a leaf (i.e. stop splitting when data size is this small)
- **min_split_improvement:** **minimum relative improvement** in split criterion for a split to occur

- **Histogramming**
- **nbins**: number of bins for numeric variables (default: 20)
- **nbins_top_level**: can be used instead of nbins; nbins will then decrease by 2 each level
- **nbins_cats**: number of bins for categorical variables (default: 1024)
- **histogram_type**: method for binning {"Uniform Adaptive", "Random", "QuantilesGlobal", "RoundRobin"}

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- **Column sampling for split:**

- **mtries:** number of columns to sample on each split

  (default: sqrt(n) for classification, n/3 for regression)

- **col_sample_rate_change_per_level:** factor by which to increase or decrease mtries per level of tree

$$\alpha = \text{col\_sample\_rate\_change\_per\_level} \ (0 \leq \alpha \leq 2)$$

$\leftarrow$ col_sample_rate

$\leftarrow$ $\alpha \times$ col_sample_rate

$\leftarrow$ $\alpha^2 \times$ col_sample_rate

For level n : $\alpha^{n-1} \times$ col_sample_rate

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