

## **GBM Parameters: Individual Trees**

• col sample rate: 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 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: histogram type: number of bins for categorical variables (default: 1024)

max abs leafnode pred

Column sampling for split:





## **GBM Parameters: Boosting**

- learn\_rate: boosting factor, eta (default=0.1)
- learn\_rate\_annealing: factor by which to reduce
  the learn\_rate every tree (default=1)

## GBM Parameters: Individual Trees



- Column sampling for split:
- col\_sample\_rate: 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
- 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: histogram\_type: number of bins for categorical variables (default: 1024)
- max abs leafnode pred



