$$X \longrightarrow X_1^*, \dots, X_B^*$$

$$\frac{1}{B}\sum_{i=1}^{B} \underbrace{c_i}_{\text{Lotree}}$$

$X_1, \dots, X_B$ iid s.t. $Var(X_i) = \sigma^2$

$$E\left[\frac{1}{B}\sum_{i=1}^{B} X_i\right] = \frac{1}{B} B\mu = \mu$$

$$Var\left[\frac{1}{B}\sum_{i=1}^{B} X_i\right] = \frac{1}{B^2} B\sigma^2 = \frac{\sigma^2}{B}$$

$$X = \{1, 2, 3, 4\}$$

$$X^* = \{1, 1, 3, 4\}$$

1^{st} 2^{nd}

$\{2\}$ = test

2-fold CV

	0	1	$\hat{C}$
B=1	0.1	0.9	1
B=2	0.55	0.45	0
B=3	0.55	0.45	0
	0.4	0.6	

$\} \longrightarrow b_{\text{consensus}} = 0$

$\longrightarrow b_{\text{probability}} = 1$

$X_1, \dots, X_B$ iid s.t. $Var(X_i) = \sigma^2$

$$E\left[\frac{1}{B}\sum_{i=1}^{B} X_i\right] = \frac{1}{B} B\mu = \mu$$

$$Var\left[\frac{1}{B}\sum_{i=1}^{B} X_i\right] = \frac{1}{B^2} B\sigma^2 = \frac{\sigma^2}{B}$$

$X_1, \dots, X_B$ i.d. s.t. $Var(X_i) = \sigma^2$
(identically distributed)

$$Var\left[\frac{1}{B}\sum_{i=1}^{B} X_i\right] = \rho\sigma^2 + \frac{1-\rho}{B}\sigma^2$$

where ρ is the correlation

$B \uparrow \quad \frac{1-\rho}{B}\sigma^2 \to 0$

but $\rho\sigma^2$ does not

$\Rightarrow$ construct trees that are as less correlated as possible

$\downarrow$

random forest $\to$ only a part of the covariates are used to construct the tree
$\hookrightarrow$ q covariate $\to$ tuning parameter

$\to$ trees are not pruned

$\to$ # of trees B $\to$ it is a tuning parameter, but not problematic $\Rightarrow$ high values