

Example

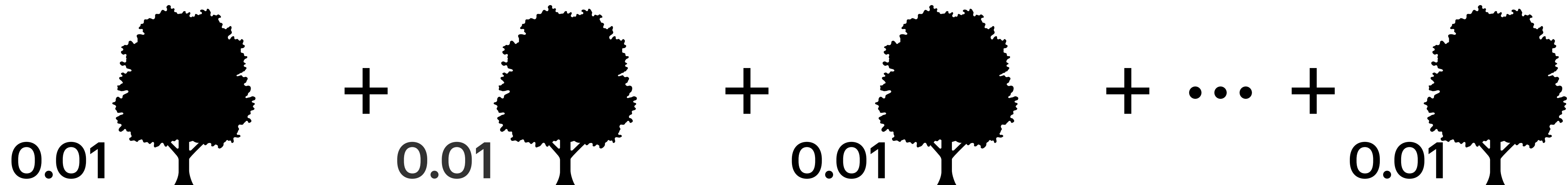
	age	initial guess	residual
obs 1	21	22	-1
obs 2	22	22	0
obs 3	23	22	1
obs 4	22	22	0
obs 5	21	22	-1

actual value = predicted + residual

what if we had a tree that could predict the residuals made by the initial model?

⇒ **gradient boosting tree!**

*instead of fitting a bunch of independent trees,
we incrementally improve on our initial guess*



Gradient Boosting Trees

Intuitively:

- Gradient boosting is a method for iteratively building a complex model T by adding simple models.
- Each new simple model added to the ensemble compensates for the weaknesses of the current ensemble:
 - each simple model $T^{(i)}$ we add to our ensemble model T , models the errors of T
 - Thus, with each addition of $T^{(i)}$, the residual is reduced