Boosting: Gradient Regression

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SLIDES ADAPTED FROM CHENG LI
Intuition: Regression Problem

Problem Setup

Let’s say you’re given \((x_1, y_1), (x_2, y_2)\ldots\): you’re given an “okay” model \(F\). How do you improve?

1. Can’t change \(F\)
2. Can only propose “delta” function \(h(x)\)
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3. \(F(x_n) + h(x_n) \Rightarrow h(x_n) = y_n - F(x_n)\)
This looks like regression

- Fit regression tree to

\[ ccx_1y_1 - F(x_1) \]  
\[ x_2y_2 - F(x_2) \]  
\[ \vdots \]  
\[ x_ny_n - F(x_n) \]

- You’re fitting to residuals to try to reduce error further!
How does this connect to gradient?