

Our Results

Can we obtain sparse optimal training algorithms with fast update times?

• **Yes! For many problems.**

- **Theorem:** For $p > 2$, there is an algorithm using $\tilde{O}(n^{1-2/p})$ space and an update time of $O(1)$ to approximate $F_p(x)$ up to constant factors

- Improves on $\text{poly}(\log n)$ update time of earlier works such as [Andoni, Krauthgamer, Onak '10]

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