Recap

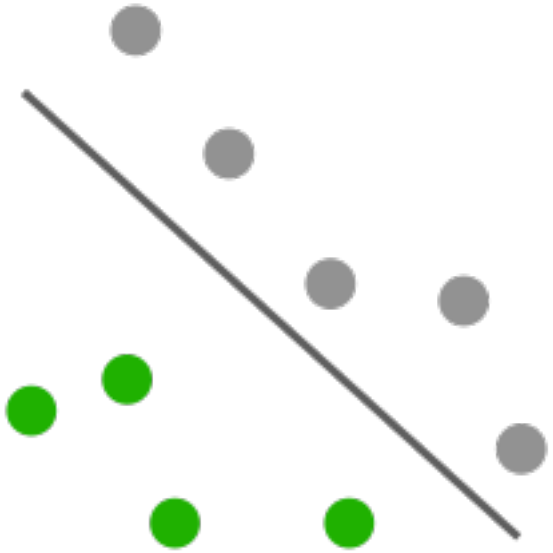
Families of ML algorithms

- Linear
- Tree-based
- kNN
- Neural Networks

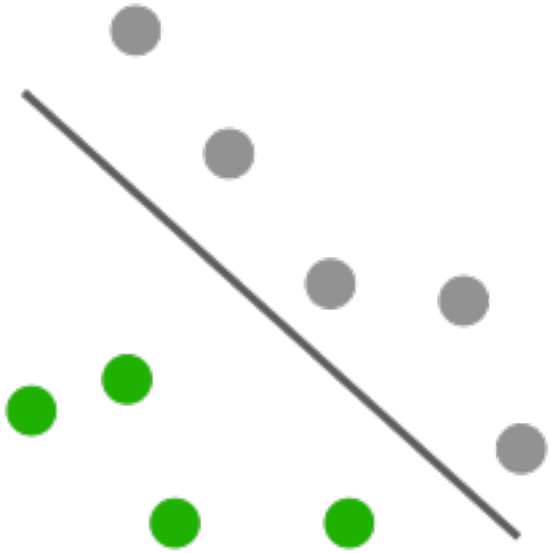
Linear model

Linear model

Linear model



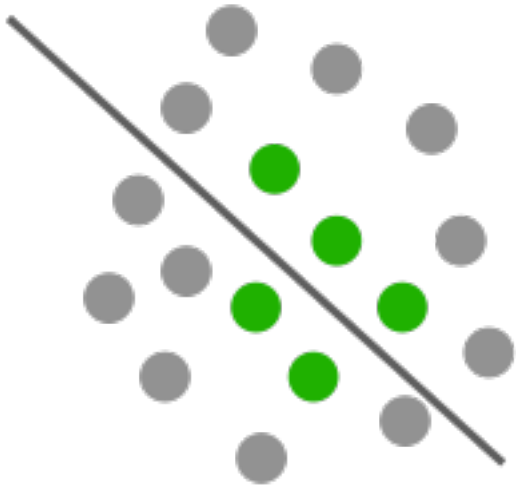
Linear model



Examples:

- Logistic Regression
- Support Vector Machines

Linear model



Linear model

VOWPAL WABBIT

Tree-based: Decision Tree, Random Forest, GBDT

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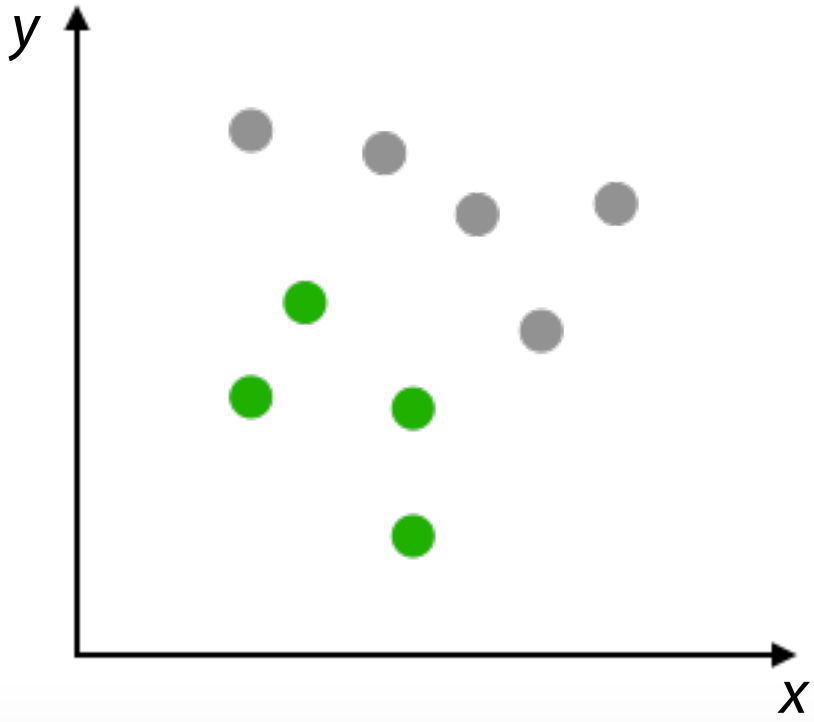

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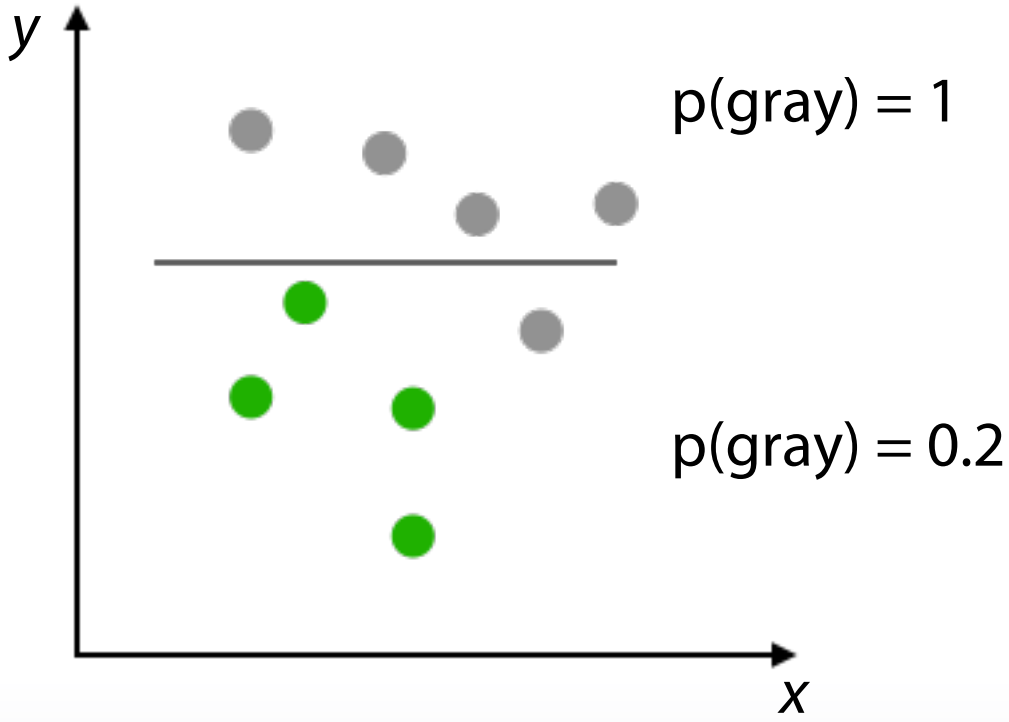

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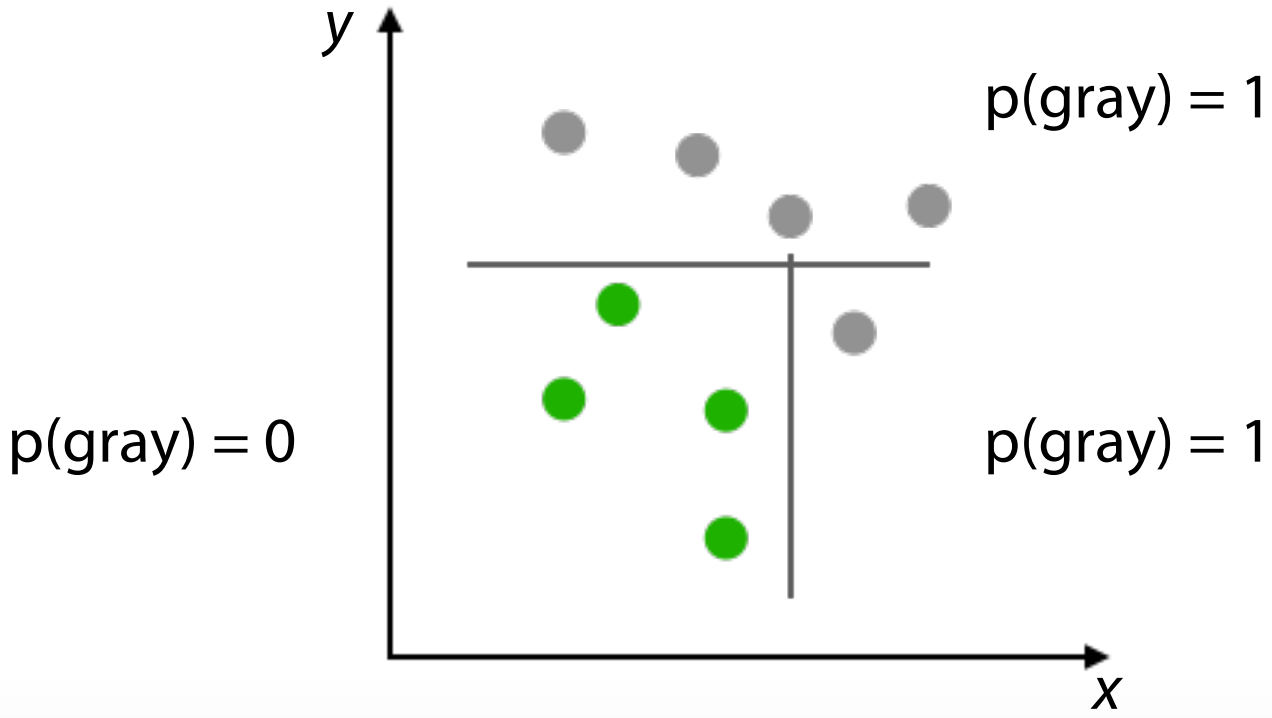

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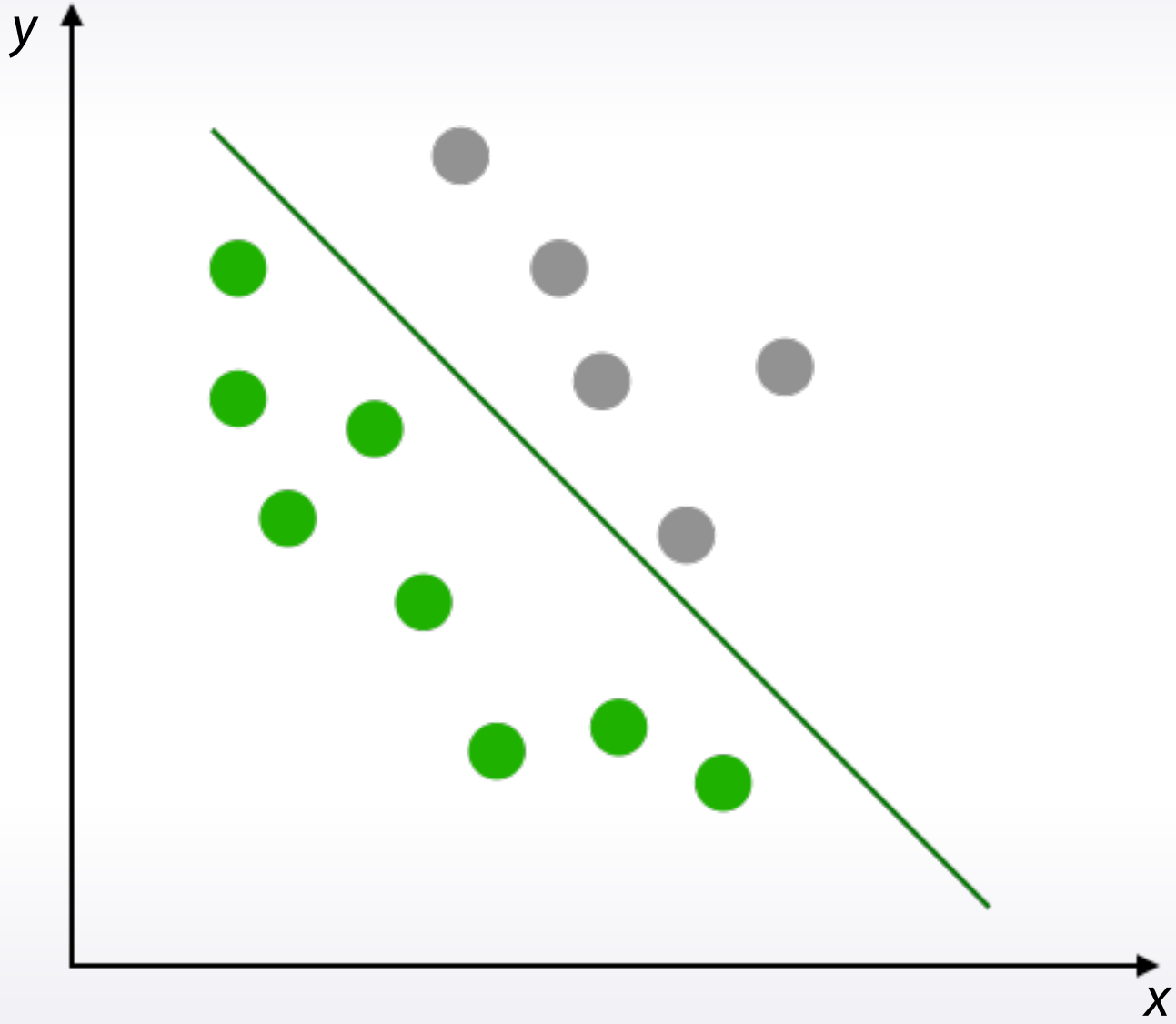

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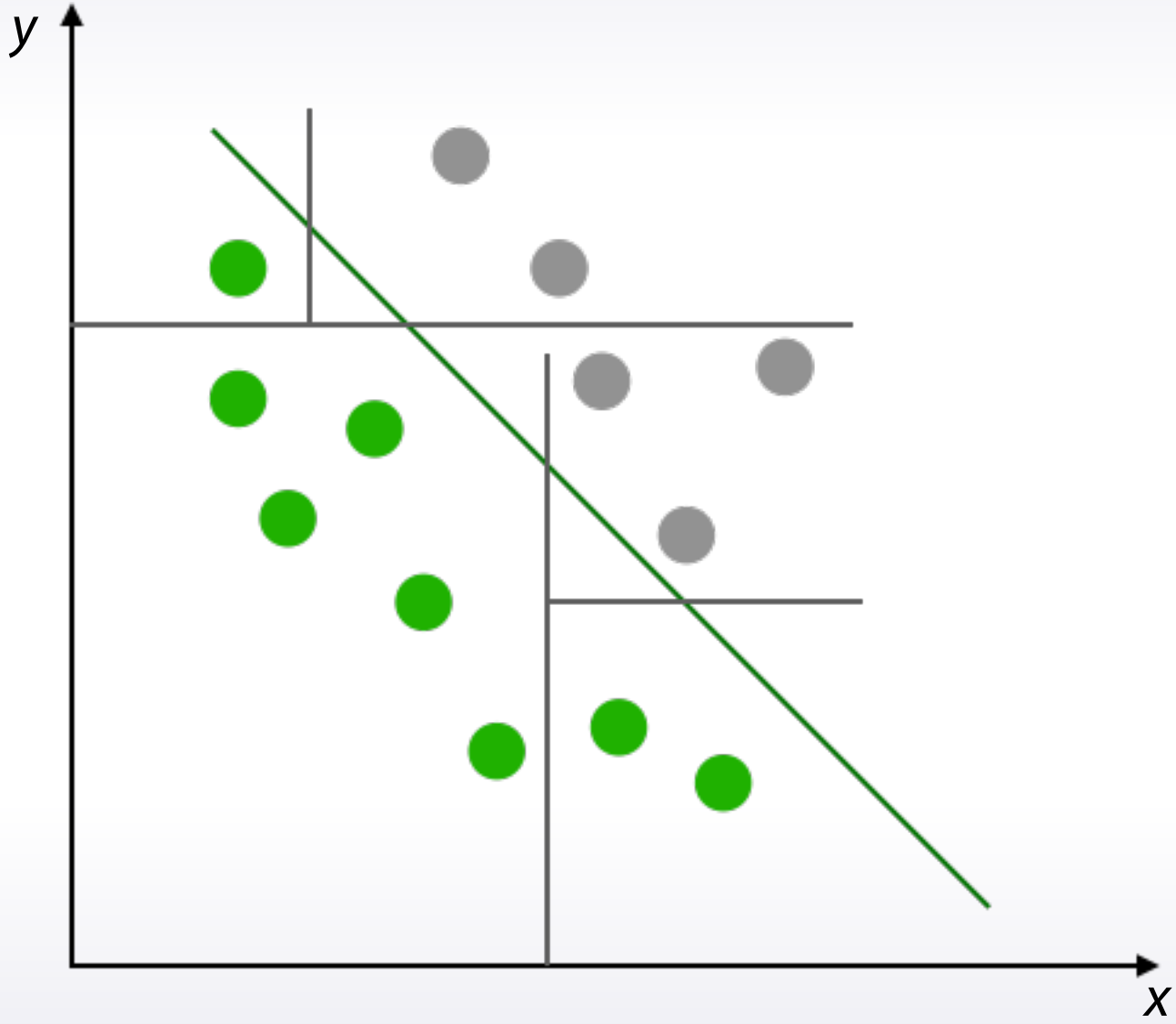

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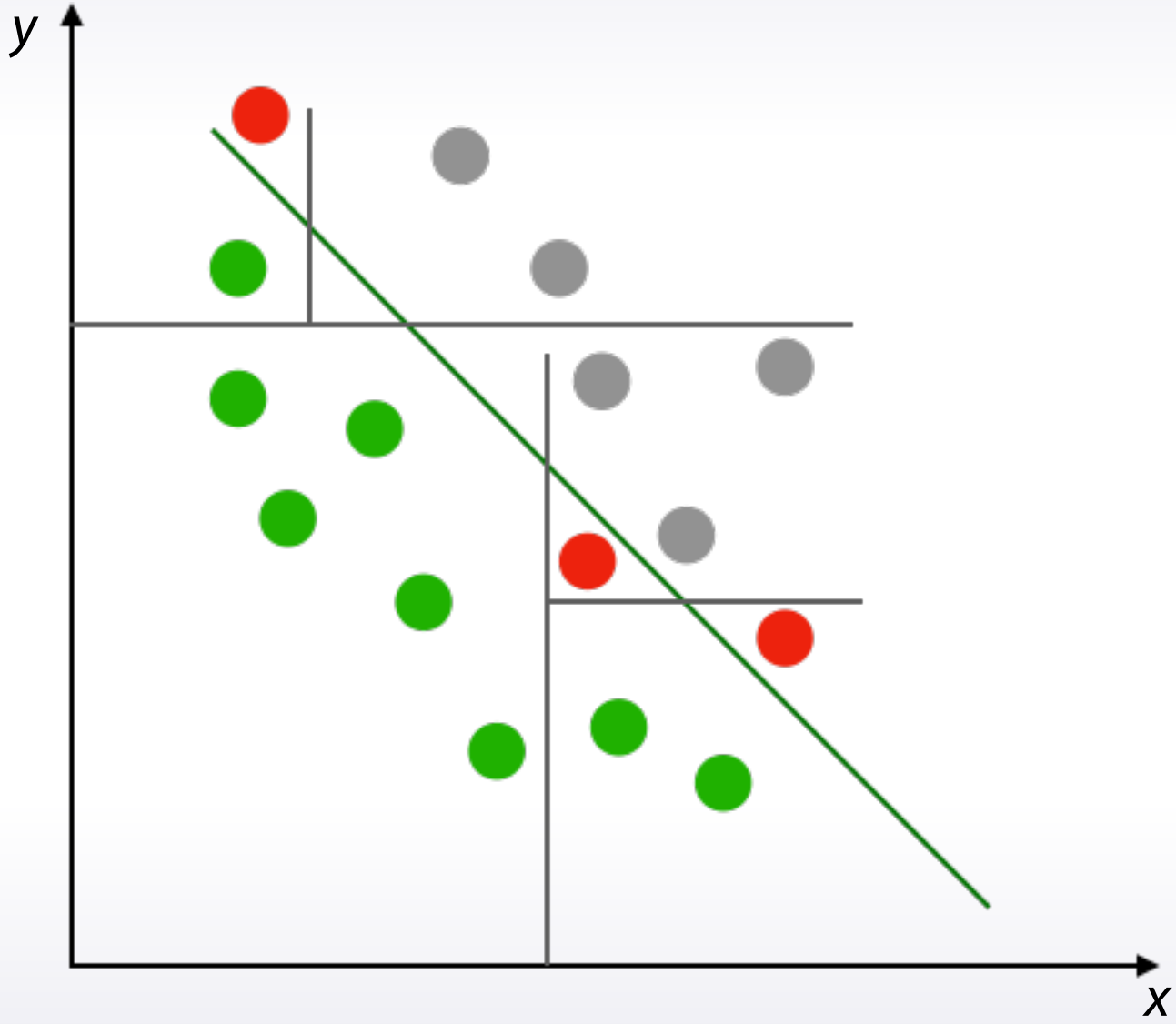

Tree-based methods

Microsoft / LightGBM

kNN-based methods

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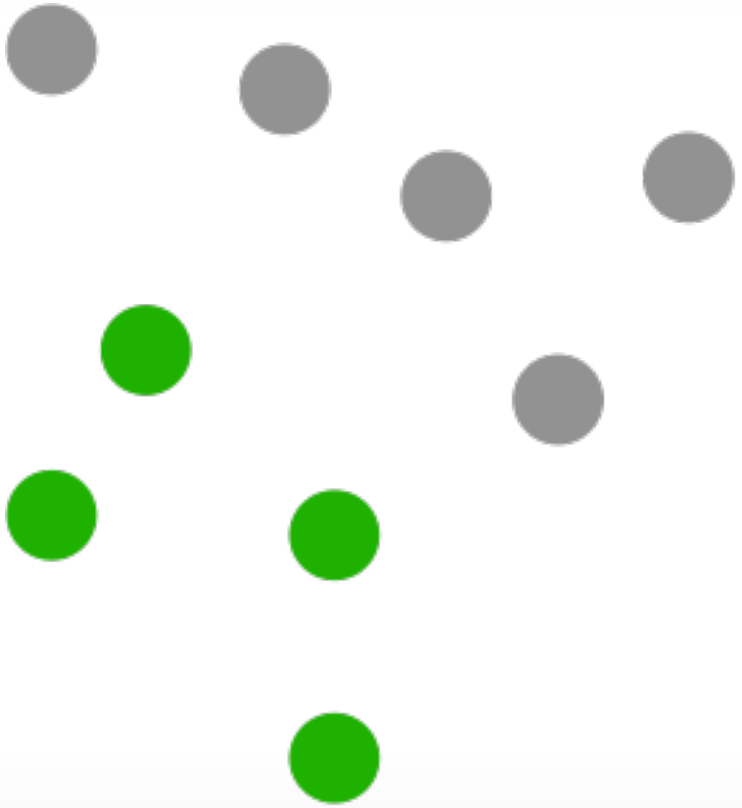
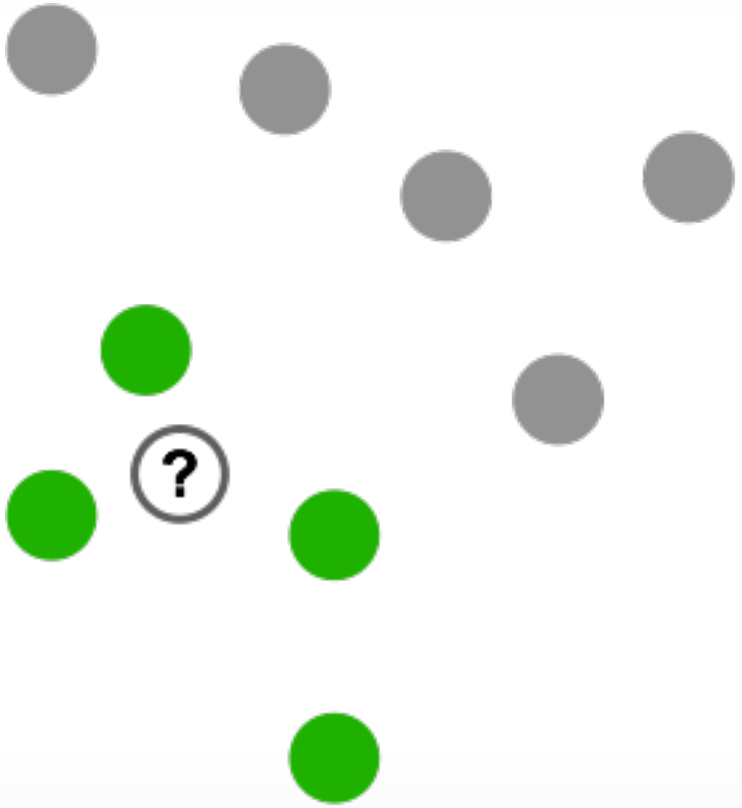


kNN-based methods



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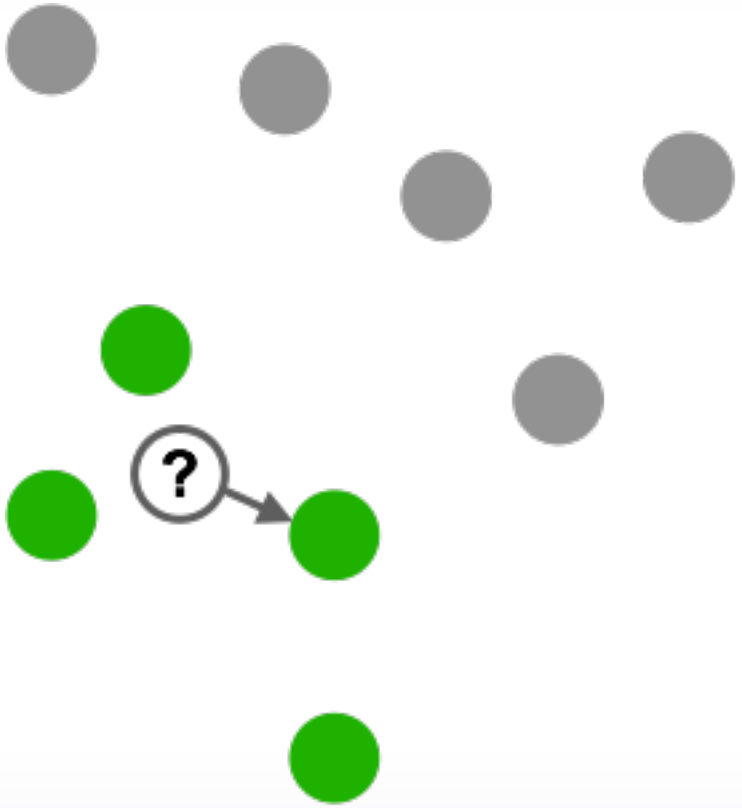
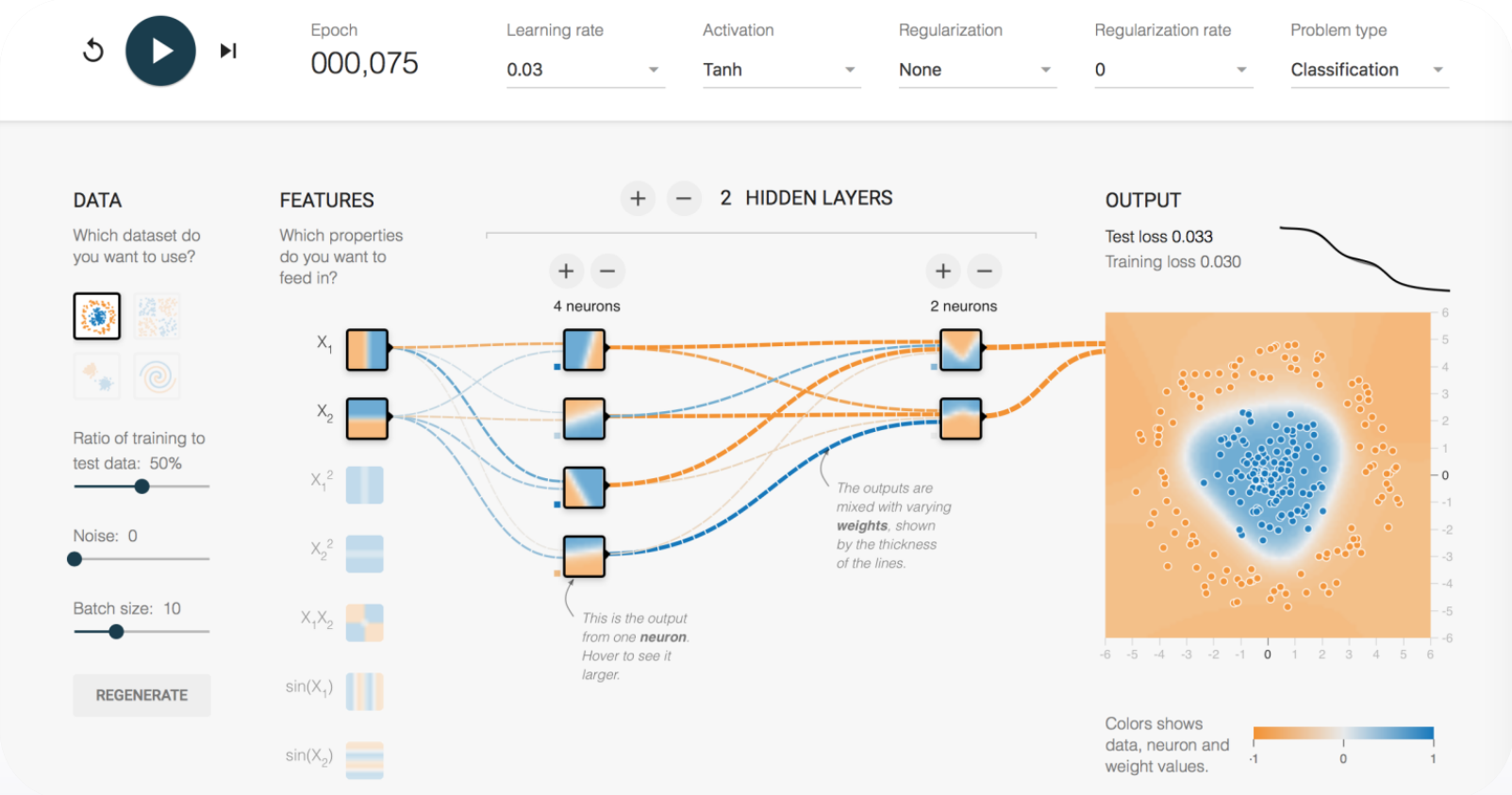


kNN-based methods

Neural Networks



Tensorflow Playground, http://playground.tensorflow.org

Neural Networks

No Free Lunch Theorem

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"Here is no method which **outperforms all others for all tasks**"

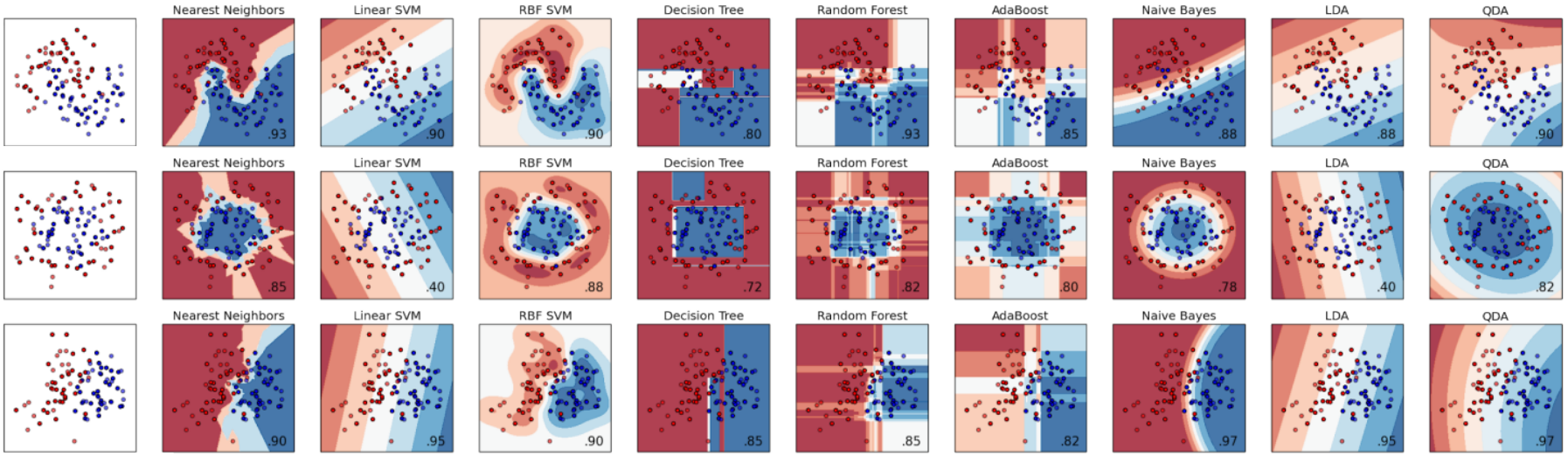
No Free Lunch Theorem

"Here is no method which **outperforms all others for all tasks**"

or

"For every method **we can construct a task** for which **this particular method will not be the best**"

Decision surfaces



Classifier comparison, http://scikit-learn.org/stable/auto_examples/classification/plot_classifier_comparison.html

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The most powerful methods are
Gradient Boosted Decision Trees and **Neural Networks**.
But you shouldn’t underestimate the others