

Advanced Machine Learning

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Project Proposal

Write a proposal describing how you plan to use deep learning to address a specific problem. The proposal should include:

1. Introduction: What is the background of the problem and what research has been done in this area?
2. Problem definition: Clearly defined problem statement mentioning the motivation behind the project.
3. Methods: What algorithms, pipeline and dataset are you going to use to solve the problem? Justify your choice.

Project Proposal

Structure:

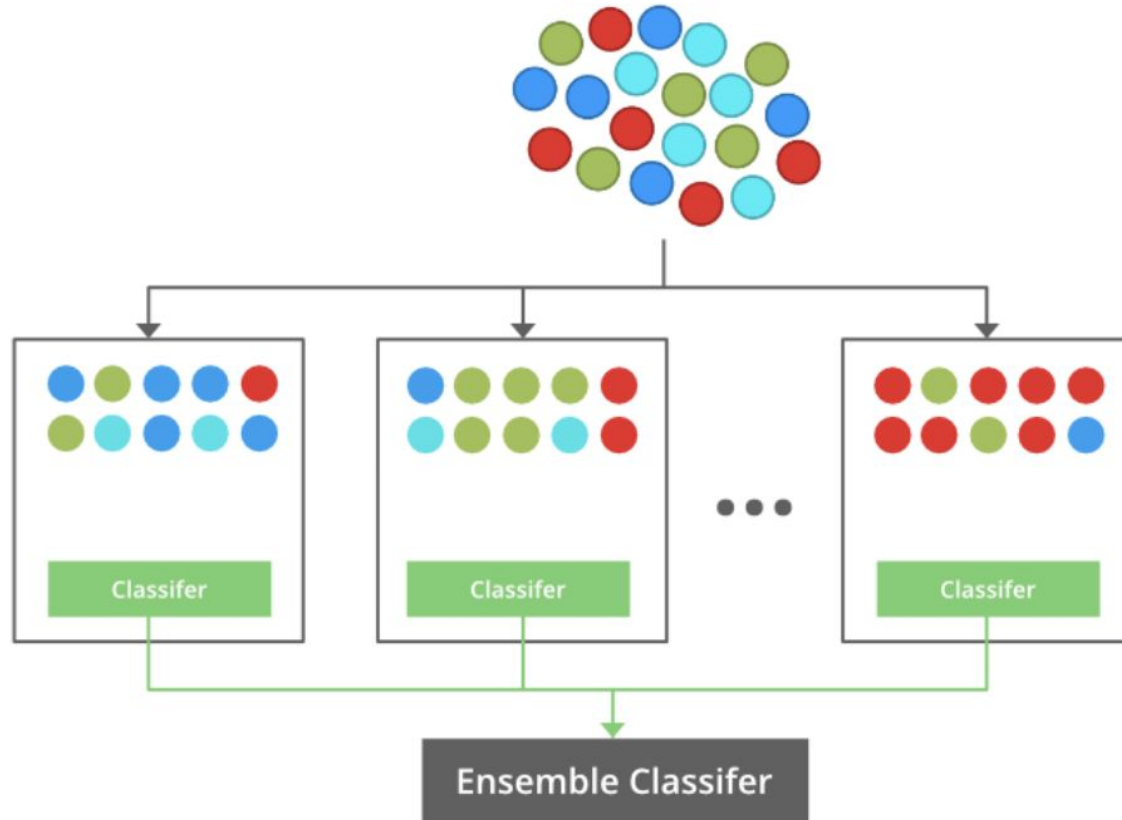
- The proposal should be between 450 - 550 words in PDF format
- The proposal should have at least 3 references
 - Proper citation required - any citation style is accepted
 - Not part of the word count
- The proposal should be titled appropriately and should include the names of all the members of the group
 - One proposal per group
 - Title and names are not part of the word count

Bagging

Bagging (short for **bootstrap aggregating**) is a technique for reducing generalization error by combining several models

- The idea is to train several different models separately and use them to vote on the output for test examples
- Machine learning techniques that use several different models are known as **ensemble methods**
- Different models will usually not make all the same errors on the test set

Bagging



Original Data

Bootstrapping

Aggregating

Bagging

Bagging

Original dataset



First resampled dataset



First ensemble member



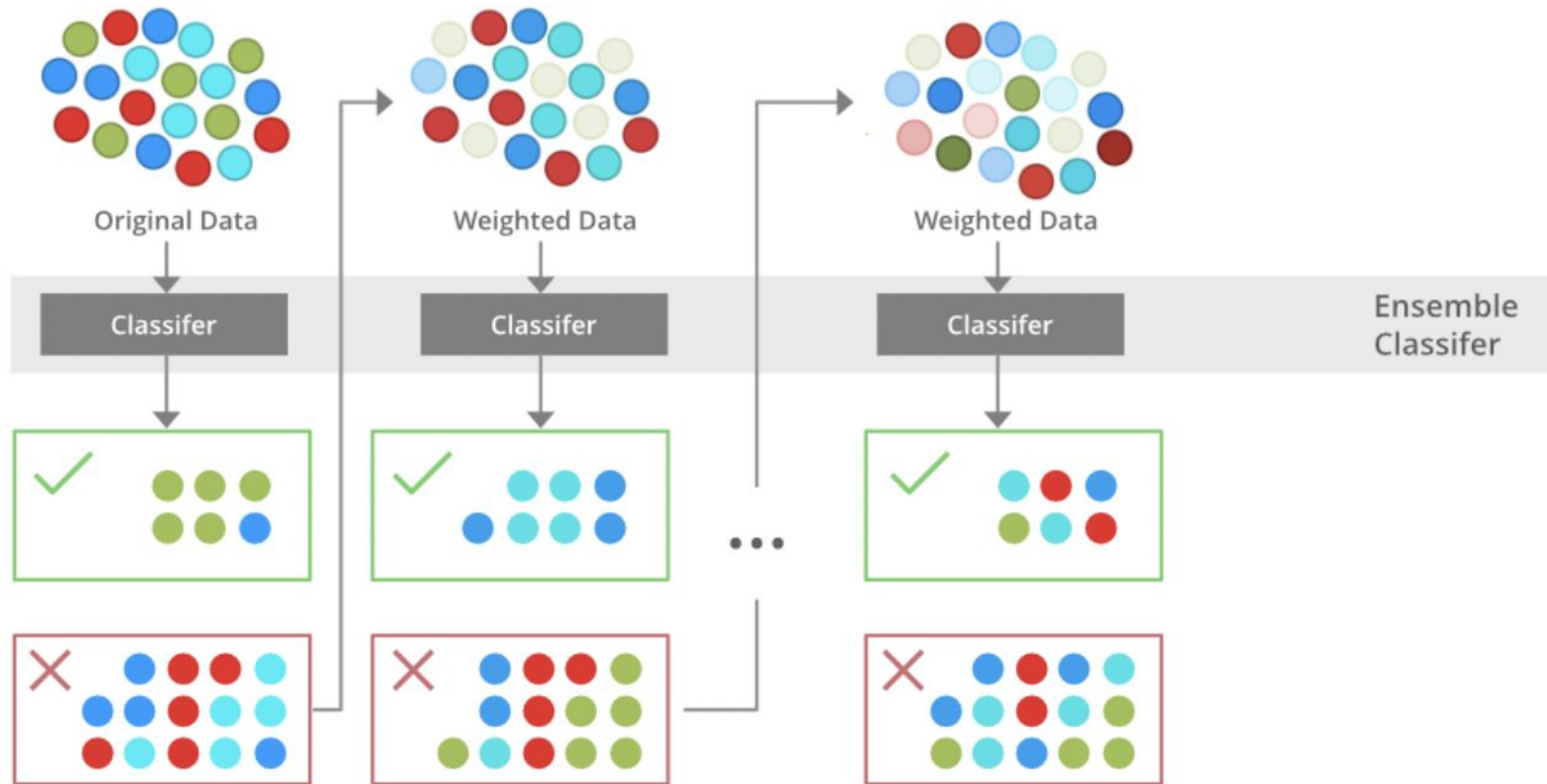
Second resampled dataset



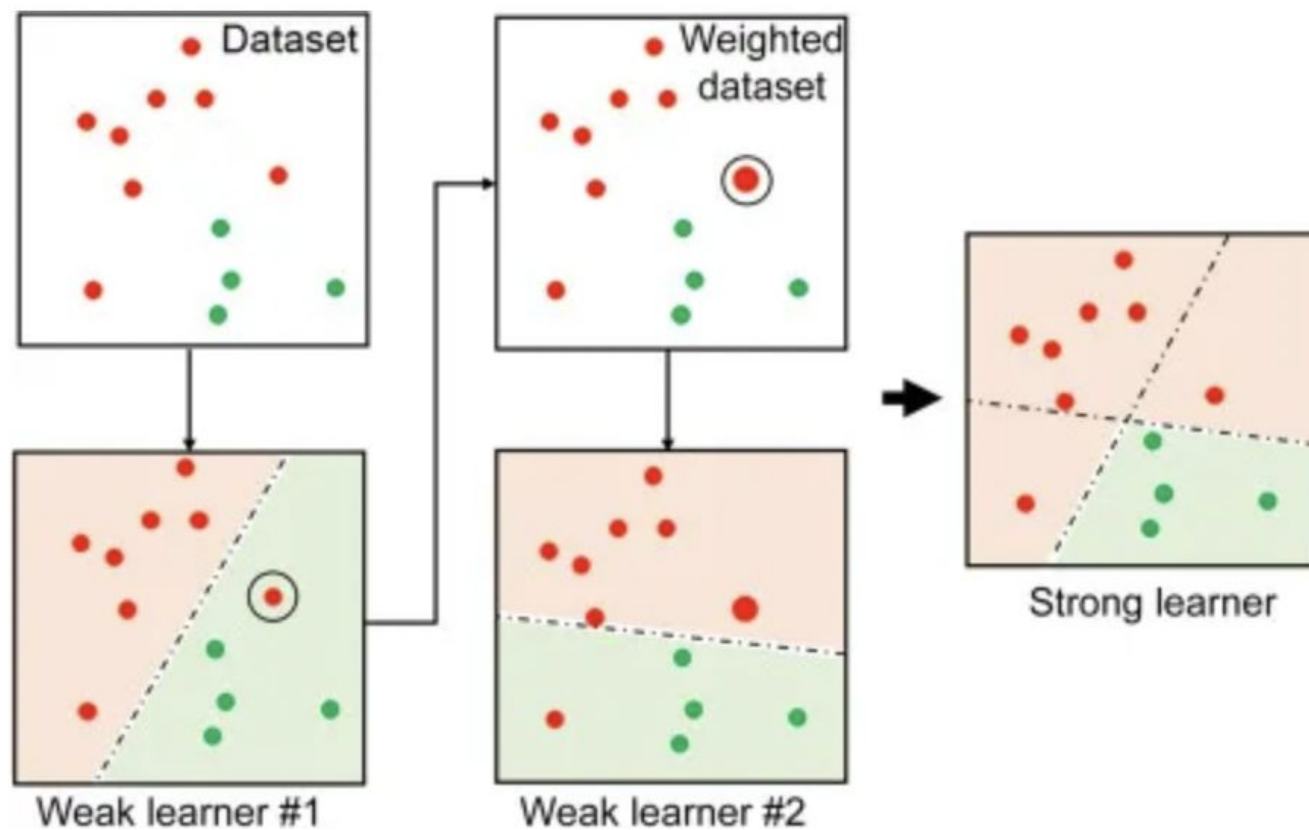
Second ensemble member



Boosting



Boosting



How is bagging used with neural networks?

