Species Distribution Models: Models and Application for Sustainable Species Conservation Day 2

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- These local topoclimatic habitats may need to be accounted for when evaluating climate-change impacts on biodiversity as they may constitute refugia for local populations and increase habitat connectivity for dispersal and migration (Jackson and Overpeck, 2000; Ackerly et al., 2010; Austin and Van Niel, 2011).

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- On the other hand, time lags associated with longevity of individuals established under previous conditions ["legacy" effects in plant distributions] or with breeding-area philopatry in birds may result in the occurrence of individuals in areas that no longer fall within their environmental niche space.
- Thus, ecological niche models may be prone to both omission errors (leaving out of the niche space information from places that could be occupied) and commission errors (including in the niche space places that cannot sustain the species).

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  6. format and level of technical detail of the information (e.g. maps, tables, time series).

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    2. **boosting**, that often considers homogeneous weak learners, learns them sequentially in a very adaptative way (a base model depends on the previous ones) and combines them following a deterministic strategy

Paradox

- If we choose base models with low bias but high variance, it should be with an aggregating method that tends to reduce variance whereas if we choose base models with low variance but high bias, it should be with an aggregating method that tends to reduce bias.

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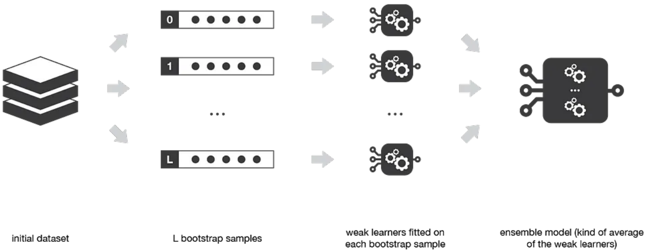
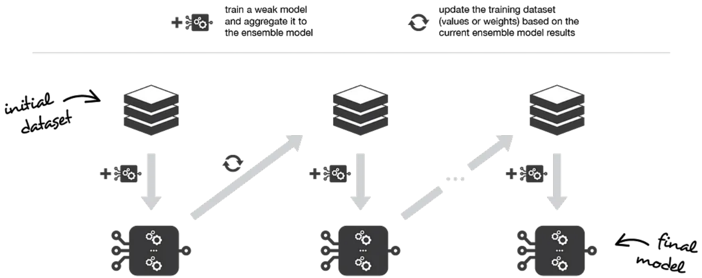
Bootstrapping

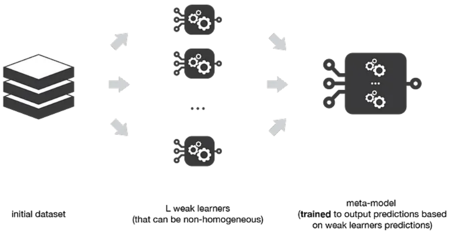
Parameter estimation while Bagging



Booting


train a weak model and aggregate it to the ensemble model
update the training dataset (values or weights) based on the current ensemble model results
initial dataset
...
final model

Stacking


initial dataset
L weak learners
(that can be non-homogeneous)
meta-model
(**trained** to output predictions based
on weak learners predictions)

Thank You