Combination Models

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Overview

Combination models:

- Used widely
- Improve decision-making accuracy
- Model architecture
- Challenges

Combination Models

Ensemble models

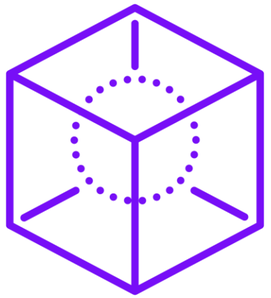
Group of models

Best outcomes

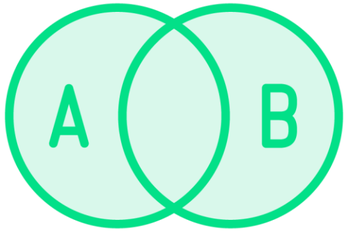
Combine predictions of multiple models

Accurate and robust decisions

Combination Models



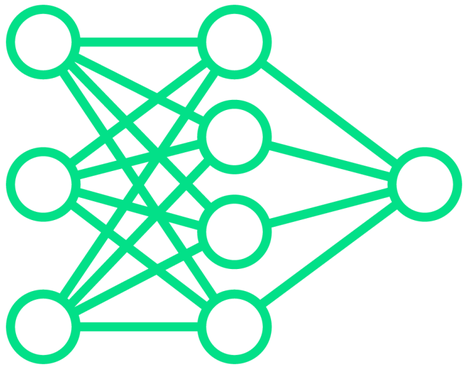
Base models



Combination methods

Meta-learner

Combination Models



Base model:

- Form a group of generative models
- Realistic images of cats
- Train two GANs for cat images
- First - cats with short hair
- Second - cats with long hair
- Two GANs - base models

Combination Models

Combination method

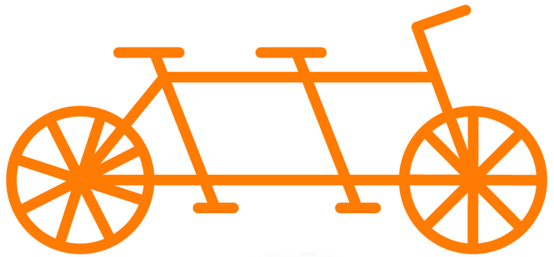
Combines base models

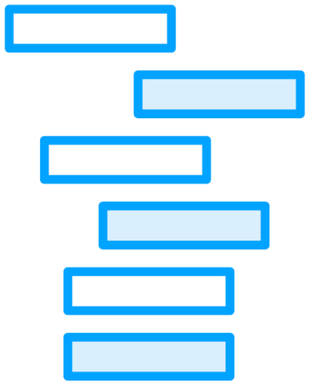
Techniques: averaging, stacking, voting

Use stacking for GAN outputs

Create a single image by averaging

Features from both original images



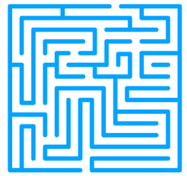


Combination Model

Meta-learner:

- Optional component
- Optimizes combining models
- Select the best GAN for the given image

Combination Models - Disadvantages



Complexity: to train and interpret

Data requirements: more than individual models

Computational cost: more for combination models

Demo

Review of successful combination models use cases

Summary

Combination model:

- Combination models use cases
- Enhance decision-making accuracy
- Group of individual models
- Collaborate for optimal outcomes

Components:

- Base models
- Combination methods,
- Meta-learner

Challenges:

- Complexity, data requirements, computational cost