



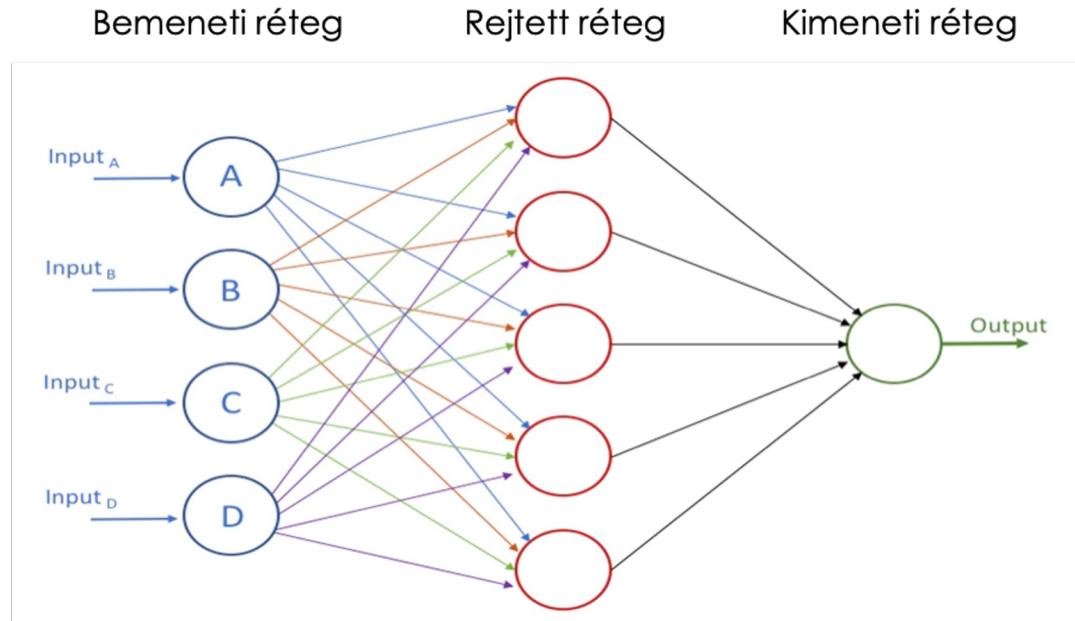
# Fejlett felügyelt gépi tanulási technikák

Data Science képzés

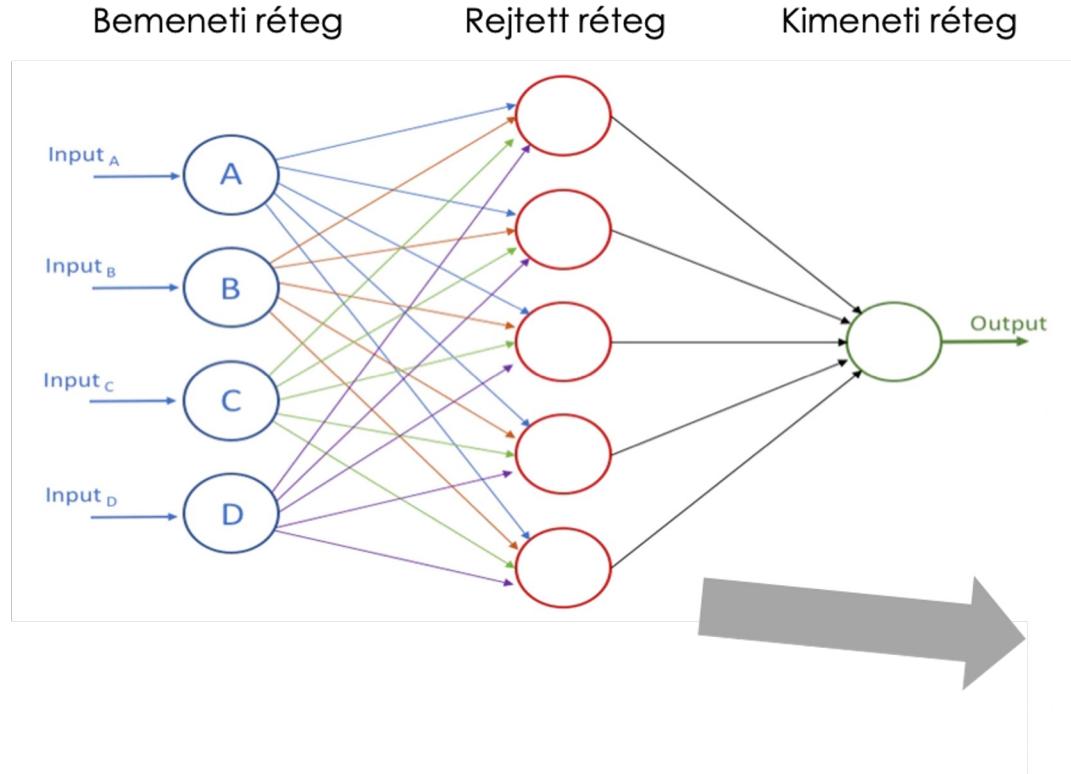
2024.10.14.

Jónás Dániel,  
data scientist

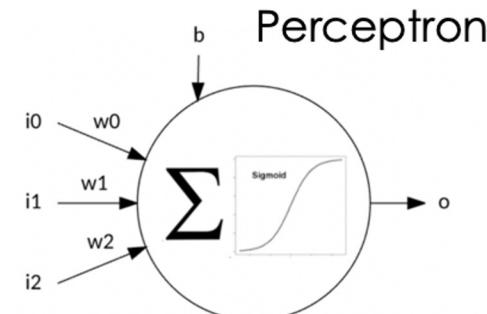
# Többrétegű neurális háló (Multi Layer Perceptron Neural Network)



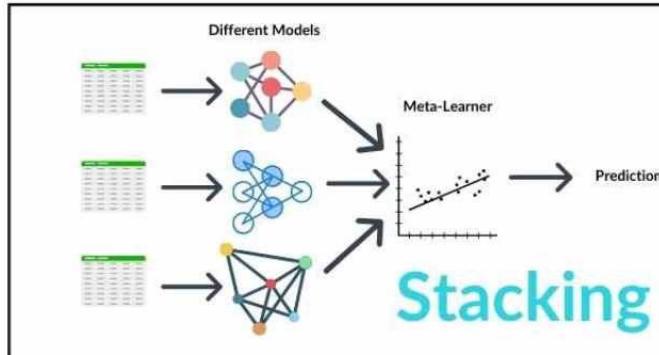
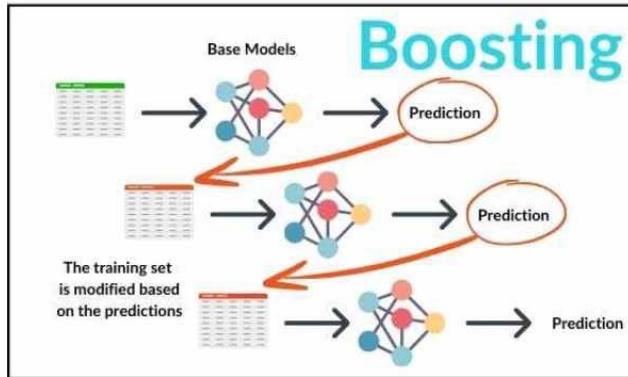
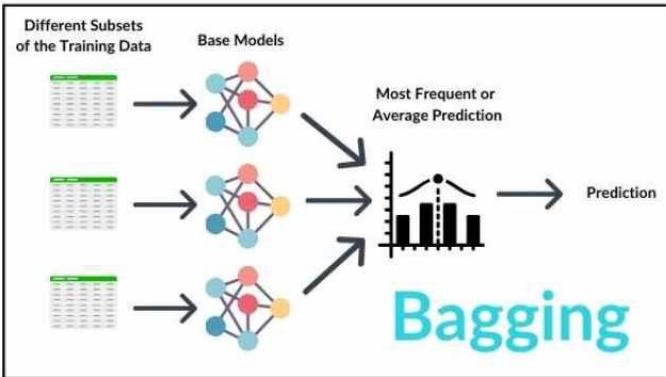
# Többrétegű neurális háló (Multi Layer Perceptron Neural Network)



$$o = g(b + \sum w_i x_i)$$

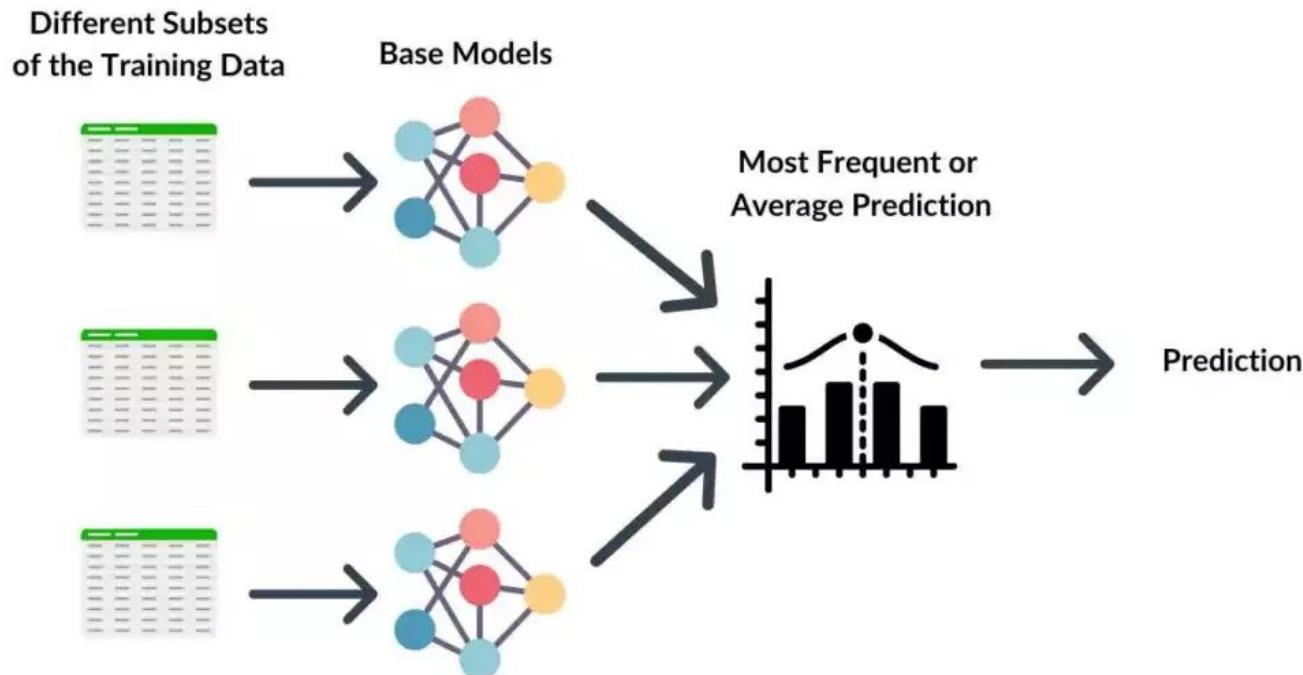


# Model ensembling



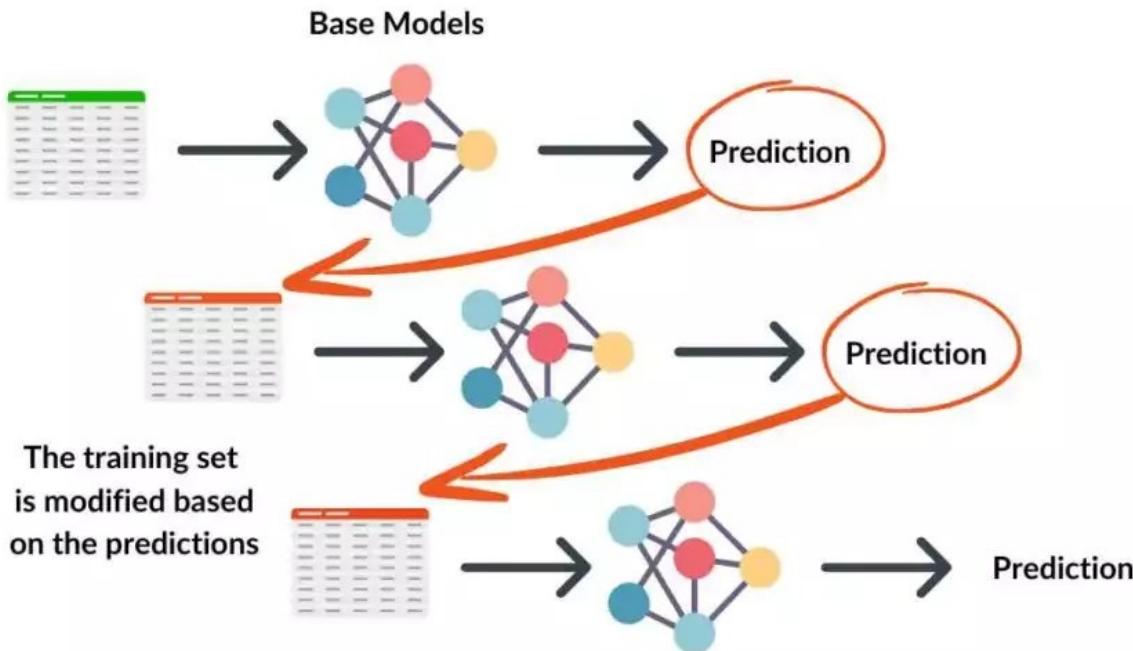
# Model ensembling - Bagging

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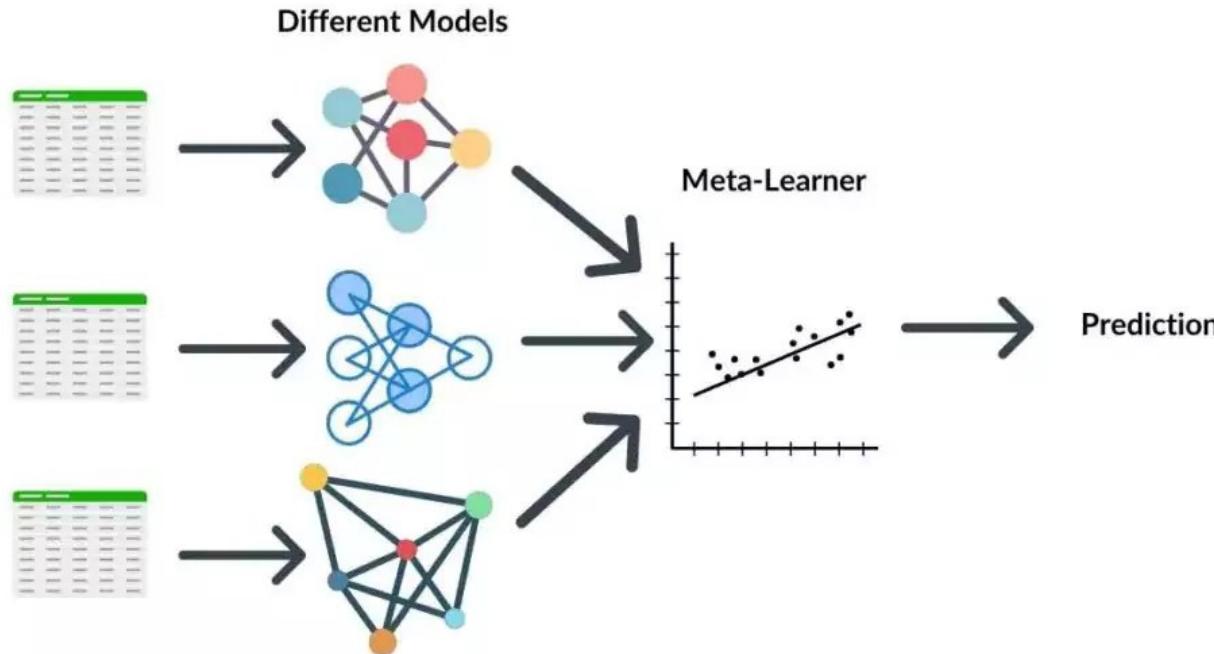
# Model ensembling - Boosting

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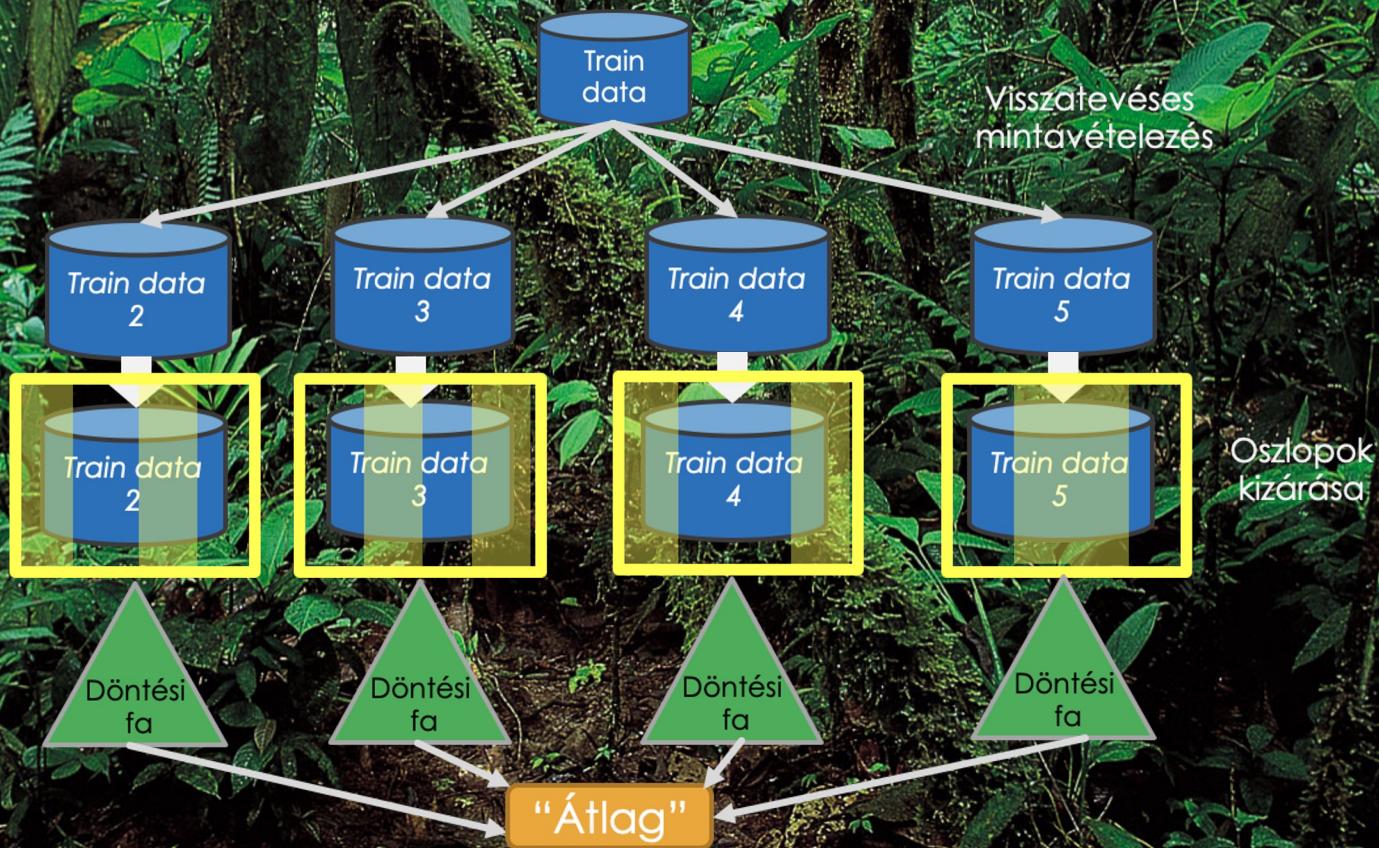


# Model ensembling - Stacking

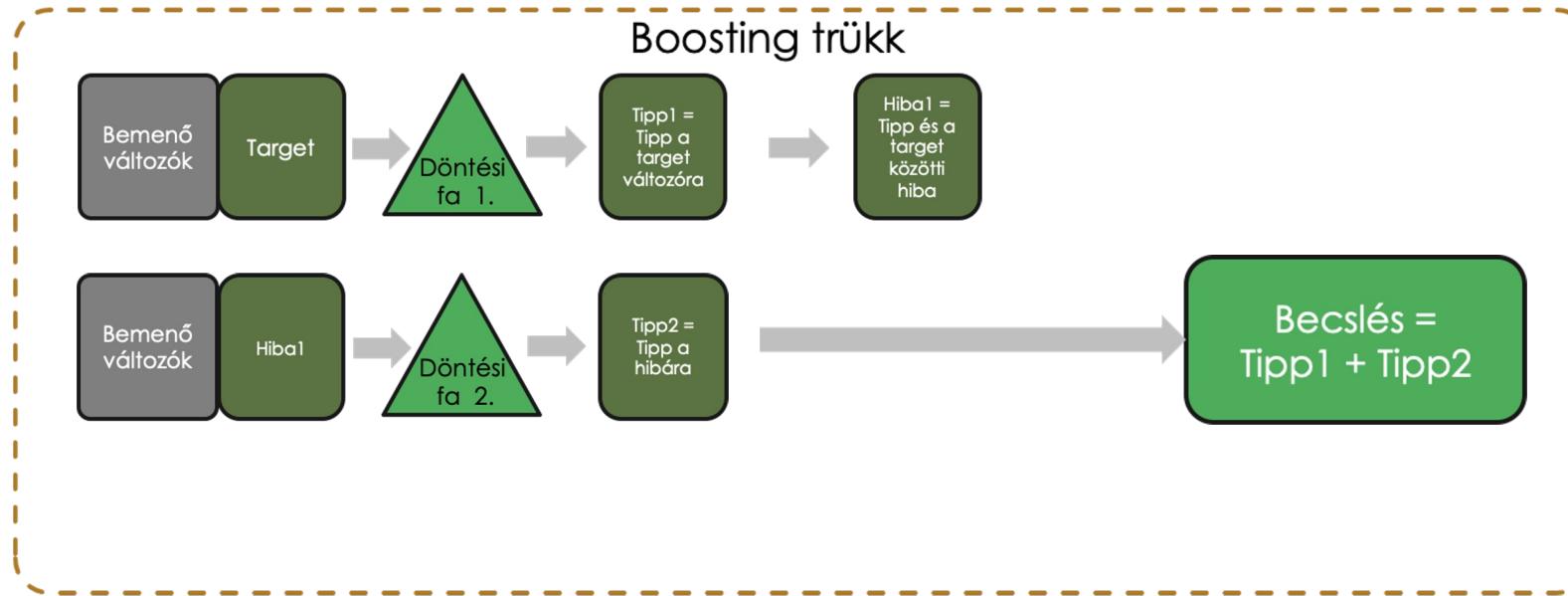
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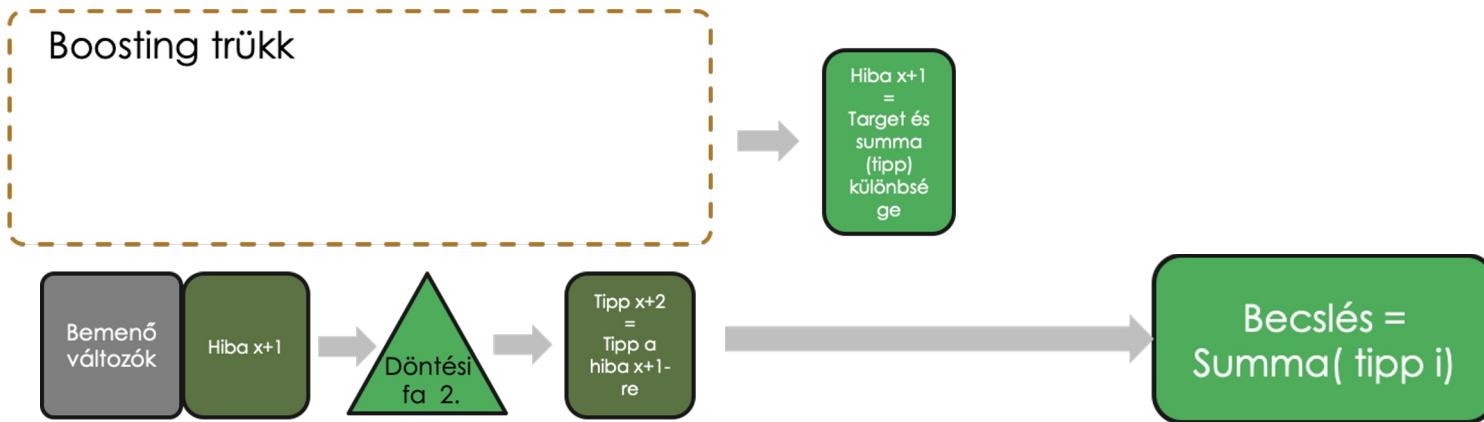
# Random forest algoritmus



# Gradient Boosting Machine



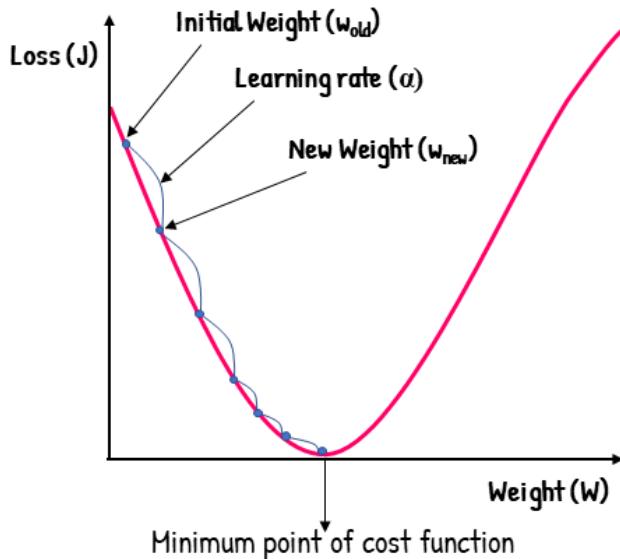
# Gradient Boosting Machine



# Gradient Boosting Machine – Gradient descent

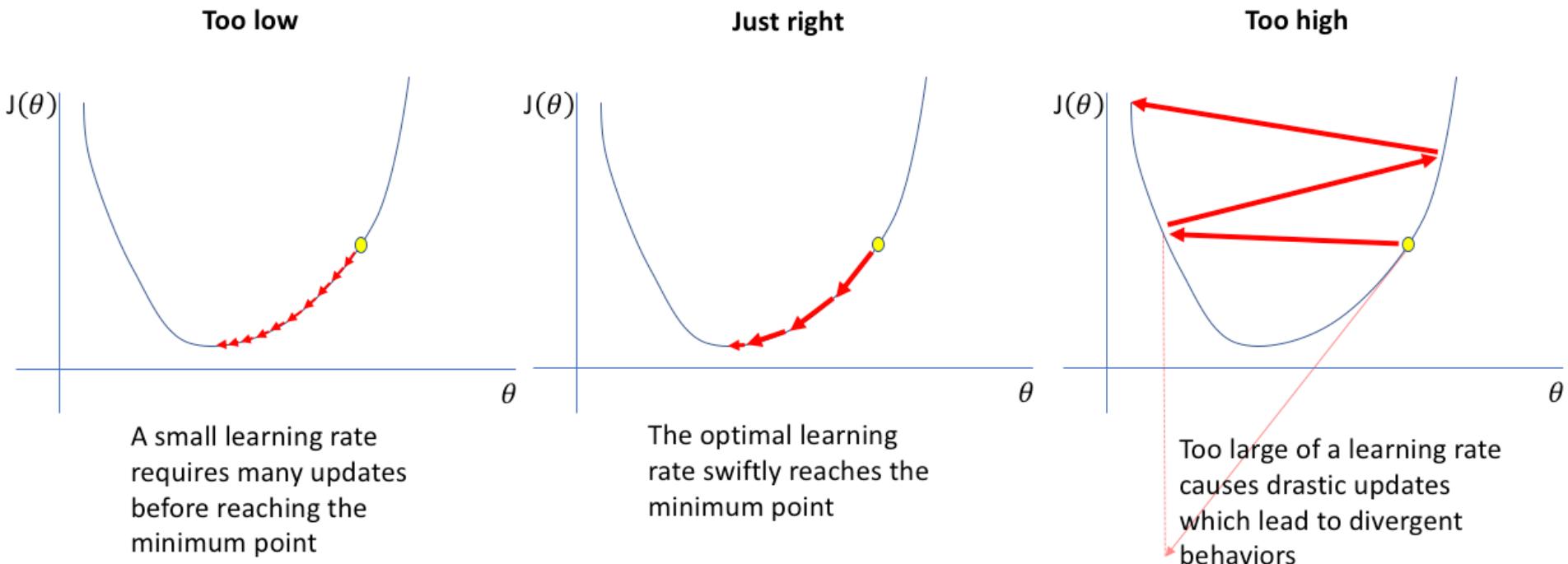
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## Gradient Descent



$$w_{\text{new}} = w_{\text{old}} - \alpha \frac{\delta J}{\delta w}$$

# Gradient Boosting Machine – Gradient descent



# Gradient Boosting Machine – Gradient descent

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