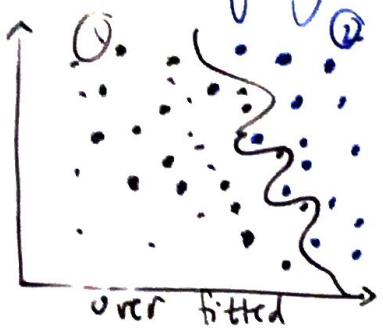
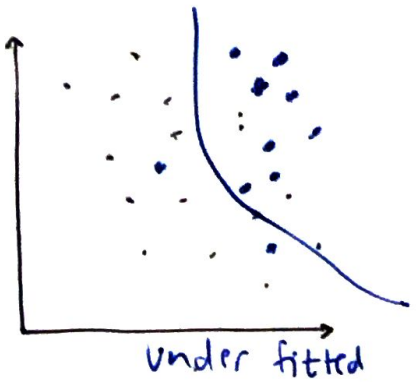
If the system works just for training data well & doesn't work for the whole system, we say the d. model is overfitting the data.





However if the system is too generic & doesn't even work well with training data, we say the system is under fitted.

→ This means that if we have multiple runs with diff. data model is biased. [could be underfitting. or NOT!]

∴ In this case, our system is too dependent on the training data, so, there will be a large Variance across different runs. → variance & overfitting are related

Overfitting	Underfitting
→ Variance	→ bias (not necessarily due to underfitting (can happen))
→ fits VERY WELL on training data	→ doesn't fit well even on training data
→ Works well on training data but not on testing set	→ garbage either way
→ use less complex model → use less features → get more data. → use another set (called validation set) → add regularization term to penalize sys complexity	→ make a more complex model to fix this. → may involve more features → or try a diff algo.