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CMPN-B

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## ML: Assignment-1

Q.1.

Task 1:

Model A (complex) is more likely to suffer a bigger rise in generalization error because although it has low bias (lower error) than Model B (simpler) it has higher variance and ~~the~~ when the data changes the high-variance models overfit past patterns and break more easily. Whereas, Model B is more stable due to lower variance even though it's less accurate.

Task 2:

- ① Use cross-validation to check if performance is stable across different data splits and detect high variance.
- ② Test for distribution shift by validating on newer or curriculum-based splits that resemble next semester's data.
- ③ Control model complexity using regularization or a simpler model to reduce overfitting and improve robustness.