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errors (as estimated by the residuals) are independent and identically distributed, $\sim (\mathcal{N}, 0, \sigma)$. GLMs can deal with dependent variables that are

• Binary (logistic regression, probit regression)

• Categorical (multinom

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Which factors cause autocorrelation in a linear regression model?

Autocorrelation, or self-correlation, is a trait of a variable. Almost any variable collected over time is autocorrelated. What causes this? Well, at the broadest level, it's the regularity of the universe! Things tend to stay the same.

Whether you are studying the weights of people on diets, the price of the Dow Jones, or the amount of tin produced in Bolivia, the value at time T is almost always a very good predictor of the amount at time T + 1.

You included econometrics as a topic. In economic data, long time series are quite common. We could have the GDP every quarter for the last 50 years o... (more)

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In what scenarios is linear regression most suitable?

That's pretty easy. You choose a linear model when the relation between the target variable and the features is linear. Sorry to be cheeky, but that's actually the situation when it will perform best. There isn't really much more to say about it.

You can try to check and see if the target variable does appear linear when plotted against each individual feature. If you find some that are noticeably non-linear then it's a good argument for trying something more general. But this is not always a great approach especially when you have many features. Noise can hide some things like interaction term... (more)

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What are the disadvantages of using a linear regression model for forecasting data?

There are several disadvantages to using a linear regression model for forecasting data, namely:

• **Linear regression assumes a linear relationship between the dependent and independent variables**, which may not always hold in real-world data. If the relationship between the variables is non-linear, a linear regression model may not be able to accurately capture it, leading to poor forecasting performance.

• **Linear regression is sensitive to outliers in the data**. If the data contains a few extreme values that are significantly different from the rest of the data, a linear regression model may be heavily influenced by these outliers, leading to inaccurate forecasts.

• **Linear regression does not account for seasonality in the data**. If the data has regular patterns that repeat over time, such as daily, weekly, or monthly seasonality, a linear regression model may not be able to capture these patterns, leading to poor forecasts.

• **Linear regression does not handle missing data well**. If the data contains missing values, a linear regression model may not be able to accurately estimate the missing values, leading to biased forecasts.

• **Linear regression is a parametric model**, which means that it makes assumptions about the underlying data distribution. If the data does not follow the assumed distribution, a linear regression model may not be able to accurately fit the data, leading to poor forecasts.

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