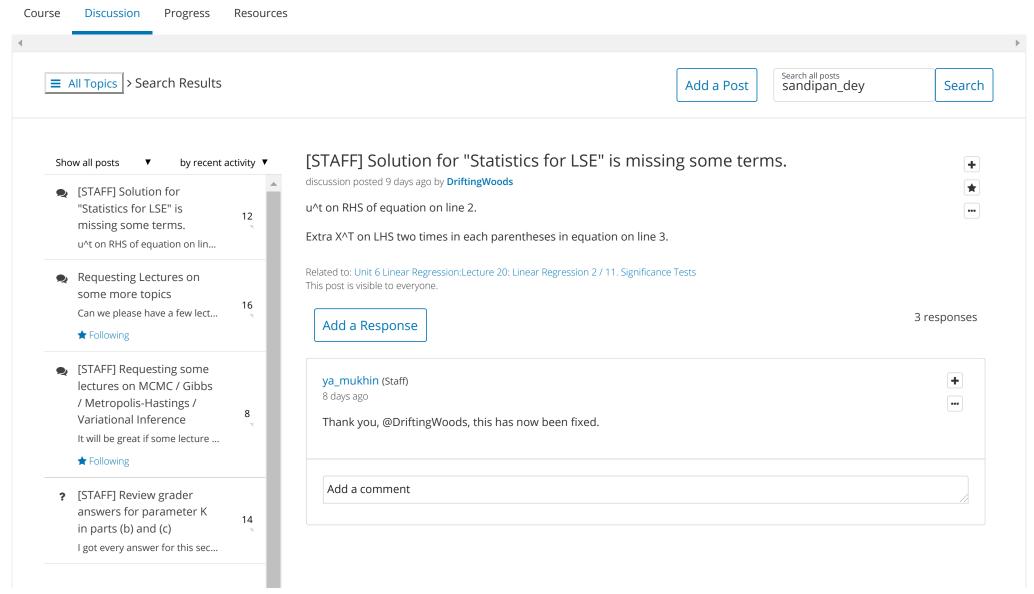
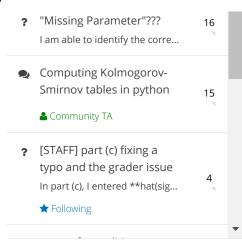
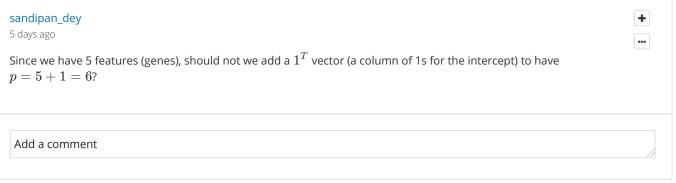
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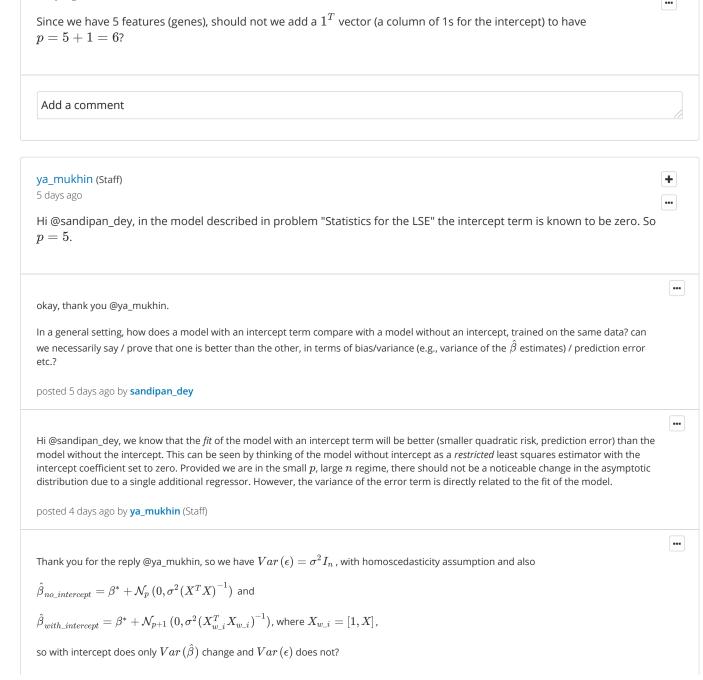












posted 4 days ago by sandipan_dey ••• Hi @sandipan_dey, when you say in a general setting, I think that there is no assumption of linearity of the conditional expectation and no assumption of homoskedasticity of the residual (no Gaussianity either). In general, conditional expectation $x\mapsto \mathbb{E}\left[Y|X=x\right]$ is some measurable function of x, does not need to be linear or even continuous. In this general setting, the linear regression model is the best linear approximation to the conditional expectation with respect to the quadratic risk. posted 3 days ago by **ya_mukhin** (Staff) Hi @ya_mukhin 1. Does the measurable function $x \mapsto \mathbb{E}[Y|X=x]$ maps from the same probability space $(\Omega, \mathcal{F}, \mathcal{P})$ (where \mathcal{F} is a [Borel?] σ algebra of the sample space Ω) to the real numbers $\mathcal R$ as the random variable X does? But wikipedia says about some sub- σ -2. So we claim BLUE due to Gauss-Markov theorem right? will it be covered in the lectures? Does there a non-linear (e.g., kernelized) extension to the theorem exist? Thank you posted about 5 hours ago by sandipan_dey @sandipan_dey, in probability theory we define the conditional expectation $E\left[Y|X\right]$ to be a random variable (defined on the same probability space as the random pair (Y, X) that is measurable with respect to the sub-sigma algebra generated by X. For the purposes of statistics, we focus on the aspects of the random variables that can be "observed" i.e. used in computations. So we think of the conditional expectation with respect to X as a function $x\mapsto E[Y|X=x]$ defined on the sample space $\mathbb R$ of X. The probabilistic definition of conditional expectation is just this function evaluated at X. posted about 2 hours ago by ya_mukhin (Staff) BLUE is a statement regarding optimality of the least squares estimator of the linear regression coefficients. When the error term is Gaussian, the LSE is also the MLE of these coefficients. The MLE is always efficient under regularity conditions. More generally, if the error terms are homoskedastic, then the LSE is efficient. With heteroskedastic error terms, there are different estimators that have a smaller asymptotic variance. The analysis of nonparametric kernel regression is very different from the analysis of least squares estimation of the linear regression and is outside the scope of this course. posted about 2 hours ago by ya_mukhin (Staff) ••• Thank you very much @ya_mukhin for your patient reply to every question that I ask, really very helpful, could you please provide some relevant links on the analysis of nonparametric kernel regression? Thank you. posted less than a minute ago by sandipan_dey

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