Jared Yu

Module 4 Discussion Reply

Great response! I like how you showed all your steps in the derivation. I am not able to say whether your result or my result is certainly correct, but I think I was able to follow along most of the way. I notice that you changed from scalars to vectors around half-way through. It would have been clearer by adding something like $\vec{y}$, but it was written on paper and so it's harder to make notation easier to understand when doing so. Perhaps this approach made sense to you, and I don't see any problem with doing so either.

Around the half-way point, your approach started to look like how I approached the problem. I tried to rewrite the SS_T, SS_R, and SS_{Res} terms so that they can be seen as some form of $(\mathbf{x})^\top(\mathbf{x})$, where the $(\mathbf{x})$ term would vary for each formula. I think through this formulation, it was easier for me to rearrange the terms and find SS_R and SS_{Res} from SS_T and then do some cancellation. In my reply, I first showed how SS_T decomposed into SS_R and SS_{Res} in addition to some alternate terms. Then I showed how those other terms zero out in the end. I think what you did is zero out some terms first then show how the rest can result in SS_R and SS_{Res}.

I don't think that there's a single way to answer the discussion. Furthermore, I also noted in another discussion reply that I was a bit unclear on exactly what the professor expected when he said to use the "hat" matrix. I see that you used it also, but I also notice that in the end you were able to remove the "hat" matrix from SS_T itself after having shown that it is equal to $SS_R + SS_{Res}$.