Journal of Prashanth Thogaru for Winter 2008

Prashanth Thogaru

March 24, 2008

Week 1(Jan 9)

We were asked to send our schedule for this quarter and I sent it. We were scheduled to meet Dr. Martin on Monday and Thursday and we also scheduled to have three group's meeting on Wednesday. The other two groups are 'Sets' and 'Regression' group.

Week 2(Jan16)

We are continuing with our last quarter's work, ' Analyzing the solution for four groups in a Y '. Jyothsna, Srikanth, Chelsie and I are going to work on this. Dr. Martin has worked on the rank 2 version of Y. Now We are going to extend the solution for general rank in this quarter.

Week 3(Jan23)

Dr. Martin gave us (me and Jyothsna) a task regarding 'Decoupling a Determinant of a Sum',which we ignored in the last quarter (i.e we ignored negative sign and proceeded further in the last quarter). We have gone through the handout and could not figure out the correct solution for that. We are still working on that.

Week 4(Jan30)

We were introduced a new notation for the 'New Multi-Linear Algebra' in this week, which looks simpler than the previous one. Our task is to generalize the formula for the 'Determinant of sum of the matrices' using this new notation. For this first we took a 2×2 matrix and calculated the required determinants and tried to generalize that. We had some doubts regarding the formula and discussed it with Dr. Martin.

Week 5(Feb6)

We computed the required 2×2 tensors and tried to arrange a particular entry (1,2) of those tensors (using + and - operations) to get respective entry in LeftHandSide(L.H.S) i.e (C+D)[1](1,2). We got the equation

$$(C+D)[1](1,2) = C[0]D[1] + C[1]D[0] + C[1]D[1] + D[1]C[1] +$$

$$Tr_2(C[2]D[1] + C[1]D[2] - C[2]D[2] - D[2]C[2])(1,2).$$

I need to verify the above equation for the remaining 3 elements of 2×2 tensor. I presented on what I did during these 4 weeks on Tuesday, i.e. on our formal presentations day.

Week 6(Feb13)

We made some modifications in the above formula. we needed another two terms $Tr_2C[2]D[0]$ and $Tr_2C[0]D[2]$ in order to satisfy the (1,1) entry of $(C+D)[1]$. After adding those two terms in RHS we got the formula for $(C+D)[1]$. Now we are preparing a report on what we derived, with that we are going to guess the formula for the general case.

Week 7(Feb20)

We prepared a report on how we derived the formula for (C+D)[1]. We have shown it to Dr. Martin and after that we corrected the mistakes in the report. The report gave us an idea on how to proceed for further calculations rather than just guessing the general formula with the existing derived formula. We are going to verify the derived formula for (C+D)[2] by computing the required tensors and arranging them(using + and - operations).

Week 8(Feb 27)

Dr. Martin gave us a handout which is an extension of Multi Linear Algebra in this handout he introduced a new notation. Using some elementary properties of determinants Dr. Martin rewrote the A[k] determinant and he explained how he derived the formula for (A+B)[1].

Week 9(Mar 5)

We prepared presentation in this week. In this week's regular meeting we gave presentation on the derivation of the formula for (C+D)[1]. There are some comments on my presentation. My presentation went for a maximum of 15 minutes, although I was given 40 minutes to present.

Week 10(Mar 12)

This week Dr. Martin gave us a new handout. It consists of definition for inner product of two un-foldings and I was introduced with new notation (i.e. new way of defining inner product). Dr. Martin has generalized the formula for (A+B)[k] and explained in this handout. I was asked to verify a particular case that he missed while deriving the formula but I was not done with that. On Monday's meeting I asked some doubts on proof and the example he has given in the handout.