

Journal of Jyothsna Jakka, Fall 2007

November 9, 2007

Week 1: September 8 to 15

Getting Started with Research

After a long summer break I started working again for Dr. Martin. This quarter I am working on a project called "Determinants" which is the extension of the work done in Spring.

I tried to remember the things we have done in spring and get started with the present work. Last quarter we worked on three groups for the general case. Dr. Martin came up with new approach and further worked on four group rank one case and a Y for rank one case. This quarter I am supposed to work on the same for the general case. I prepared for the seminar which I am supposed to give in the next meeting about the antisymmetric inner products.

Week 2: September 15 to 22

Understanding previous work

Dr. Martin explained me the Y pattern and the method he has used to solve it. I tried to expand the determinants derive the result, but I was stuck in between. Dr. Martin tried to explain me again how he has derived it. I am working on that again to get the result.

Week 3: September 22 to 29

Finally solved "Y" for rank 1 case

I expanded the determinants again but I felt that I am almost near to the answer but there was some difference in the signs of some of the terms. So I rechecked everything again and corrected my mistakes. Then I could figure out few terms in the final result Dr. Martin obtained but left with some terms which I could not figure out. Dr. Martin helped me to identify the terms and explained how he got the trace term in the final result.

I prepared for the seminar which I was supposed to give in the next meeting.

Week 4:September 29 to October 5

Finding a way to represent the result of four groups "Y" pattern

I started preparing a report on the four groups which I figured out how to solve. But the method I used was expanding all the determinants which Dr. Martin said is not the right approach. Then we tried to solve it by decomposing the bigger determinants into smaller ones. Dr. Martin tried to devise a method by looking at the result and trying to figure out how we can decompose it into smaller determinants.

Week 5:October 5 to 11

Report on four groups "Y" pattern

After Dr. Martin arrived at the final result. I tried to understand the whole thing and started writing my report on this new method. I tried to explain everything in detail and write down in the report. Then we tried to explain this report to all other team members so that they understand how we got the result. There were few errors in my report which I corrected.

Week 6:October 11 to 18

Thinking about new method for solving general case

Dr. Martin said that the method we used to solve the three groups general case might not be the right one. So Dr. Martin tried to look at another method with tensors and work on it which was hard for me to understand. I am still trying to understand what Dr. Martin is trying to do.

Week 7:October 18 to 23

Hard time understanding the new method

Dr. Martin tried to explain us the method he devised in different ways so that we understand. It was difficult for me to understand though I managed to get something. I used to understand when Dr. Martin used to explain in the meeting. But when I tried to reproduce it myself or look at the paper again I was confused. I struggled to do something but ended up with no idea of solving the determinants.

Week 8:October 23 to 30

Finally understood the new method

Dr. Martin explained me how to figure out the terms by taking 0, 1, 2, 3 off diagonal elements. Initially I felt a bit confused but as Dr. Martin was explaining me I started understanding the things better. I felt that I was getting into this method. I tried to work this on my own. I tried to figure out the terms with 3 off-diagonal elements. I was able to come up with the terms but was not able to arrange them in direction 1 or 2. I was wondering how Dr. Martin was able to arrange the terms as tensors in different directions.

Week 9:October 30 to 6

Preparing Final Report

I tried to reproduce and write all the terms which I could. I felt comfortable after doing this. But while I was working on it I came up with few doubts which I cleared them in the next meeting. I felt that there were more number of terms than we expected which was true. And we ended up with the conclusion that the $K!$ term which was introduced to get rid of redundancy was not supposed to be in that position. We tried to figure out a formula for the general case but were confused.

Dr. Martin asked me to prepare a final report on the work we have done on determinants this quarter. I started working on it.

Week 10:November 6 to 13

Final Presentation

Each of the team members were assigned specific topics for the final presentation. I prepared a latex document of my presentation and sent it to Dr. Martin. After a few corrections and additions I sent my presentation to Srikanth so that he would merge it with others and prepare the final presentation.

We are done with our final presentation on Friday 9th of November. I prepared part of my final report and working on the other.