

Report of AMSC664

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Thursday, January 29, 2004

In this winter break, I debugged my optimization functions and tested my problem by Matlab Optimization toolbox for comparison. I also read some reference books about the parallel computing.

1. I settled my programs in the Linux cluster of UMIACS eventually.
2. At the end of last semester, my program of conjugate gradient method doesn't work well for the high dimensional functions. In some case, it doesn't converge. I found the bugs in functions calling. Now my program works well by using conjugate gradient method.
3. I rewrote the subroutine of line search(minimization), because I wanted to take the advantage of the gradient of the energy function. By doing this, I accelerated my program successfully. It converges more quickly.
4. How to generate the gradient of the energy function, this is the shortcoming of my program. Writing down the gradient function directly is easy, but I lost the generality. I am working on the auto-generated gradient. Basic idea is to use the discretization form of the energy function and consider the case of bilinear element.
5. I studied the Nelder-Mead method. Because the optimization toolbox of Matlab has the build-in function FMINSEARCH that uses the Nelder-Mead method, I tested my problem in Matlab.
6. I read some reference books about parallel computing. It is the preparation of this semester's work.

Due to my travelling back to China this winter break, I didn't make great progress on my project in the past month. I'll work hard on it this semester.