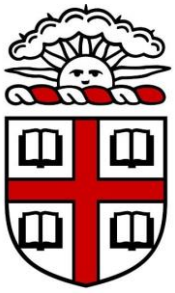
A Study of Phase Separation in Ternary Alloys

Course Project Update 2 - ENGN 2912B
High Performance Computing

ARJUN SHARMA, AVPS ANCHALA, SAYAN SAMANTA



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Planned Project Schedule

The major milestones in this project and the associated deadlines (tentative) are set as follows:

- **Week 1 (27th November): Set up the major routines independently among the groups for a serial code in 2D. The major subdomains are:**
  - **Read the input from the user in the specified format and raise errors if the input file is not in the proper format. (ongoing)**
  - **Generate pseudo random numbers based on the perturbations across the mean variable for each component. (✓)**
  - **Write the code for the 2D serial. (✓)**
  - **Reading the generated data to file. (✓)**
  - **Visualization of the data in a 3D matrix plot. (✓)**
- **Week 2 (4th December): Observe the evolution of equations in 2D and test with the results as given in the paper, once successful, extend the code in 3D and incorporate parallelization. This task has to be done in tandem with all the members through the common git repository.**
- Week 3 (11th December): Improve any glitches in the code, improve the performance and the visualization of the data.

Progress Till date

- Successfully obtained the results in 2D serial case(✓)
- Visualization in serial & 2D case is completed(✓)
- Facing challenges while parallelizing with the MPI (ongoing)
- Successfully obtained the results on parallelization with threading (✓)
- Visualization in parallel and 2D case is completed (✓)

Modified Schedule

- **Week 3:** Extend the code to 3D. Parallelize with MPI instead of threading. Performance profiling, Modifying performance.

Major challenges faced and expected challenges

The major challenge was parallelizing the code with MPI and organizing the data after the calculation for the purpose of visualization. For now, the team went ahead with threading instead of MPI. Future challenge is to extend the data to 3D and its visualization.