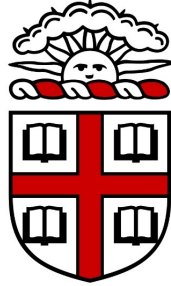# A Study of Phase Separation in Ternary Alloys

Course Project Update 1 - ENGN 2912B
High Performance Computing

ARJUN SHARMA, AVPS ANCHALA, SAYAN SAMANTA

Brown University

Tentative Project Milestones

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. ($\checkmark$)**

    - **Write the code for the 2D serial. ($\checkmark$)**

    - **Reading the generated data to file. (ongoing)**

    - **Visualisation of the data in a 3D matrix plot.**

- Week 2 (4th December): Observe the evolution equations in 2D and test with the results as given in the paper, once successfull, extend the code in 3D and incorporate parallelisation. 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.

Work done so far

The following tasks have been acheived so far.

1. A rough draft of the 2D serial code has been written. This includes

    (a) Coding of a pseudo random generator using uniform real distribution.
    (b) coding of the evolution equation (*simulation()*)

2. The code of writing to file (at regular timestep) will be completed by tonight.
3. The code of accepting simulation parameter from an input file will also be done tonight.

Modified Schedule

- **Week 2:** (Two of us have end term on the 6th, hence we plan to work a bit slow this week)

    - Visualize the result in 2D.
    - Parallelize the code.

- **Week 3:** Extend the code to 3D. Performance profiling, Modifying performance.

Major challenges faced and expected challenges

The bulk of the coding has been completed. However the minor (coding wise) yet challenging portions which is primarily parallization remains. The 2D visualisation has been sorted out, but we are still deciding on the visualisation of the 3D data.