**Assignment1 Report**

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1. Function Implementation Description

* **matrix\_addition function**

The function first checks the storage types of input matrices by checking A\_rowMajor and B\_rowMajor parameters. Based on these parameters, there are four different types of implementation available inside the function. Generally, matrix addition is performed by adding each element at same location of two matrices. Following Figure 1 shows simple 2 by 2 matrix addition.

Figure 1: Example of matrix addition

Essentially, this can be performed by going through each element of matrix using two for loops, and adding each item. In my implementation, first for loop is used to go through all rows. For each row, second for loop is used to access each column of matrix. All of four implementations follow the same method to calculate matrix addition except how offsets are calculated. Assuming matrix A[N][M] has N rows and M columns, the offset is calculated using equation 1 for row major matrix whereas column major matrix uses equation 2 to calculate its offset.

[Row Major] --- Equation 1

[Column Major] --- Equation 2

The method to calculate offset for both row major matrix and column major matrix are used throughout all functions.

* matrix\_multiplication
* mv\_multiplication

2. Performance Report