**About CUDA web apps**

CUDA (Compute Unified Device Architecture) is a parallel computing platform and a programming model developed by NVIDIA that enables the usage of NVIDIA graphics processing units (GPUs) for general purpose calculations. Due to the presence of large number of cores and simultaneous threads certain parallelizable algorithms run extremely fast on CUDA than the CPU.

This is a web interface that links CUDA enabled binaries so that data uploaded via the web interface will be processed using CUDA and results submitted back through the web interface. User will have to just upload files, provide necessary data and to click a button to get the results. The internal complex processes have been hidden through the web interface which provides a good abstraction.

The web interface has been developed using php. Underlying CUDA applications that do the real computations have been completely written using pure CUDA C and compiled using CUDA toolkit 6.5. The programs run a NVIDIA Tesla C2075 high performance graphics card that support CUDA compute capability 2.0. It has a memory of 6 GB, 448 CUDA cores and supports more than 14000 threads.

**What you can do**

1. Matrix Operations
2. Matrix Addition

Output will be addition of the matrices you provide in a matrix form.

1. Matrix Multiplication

Output will be multiplication of the matrices you provide in a matrix form. Here the column numbers of matrix A should match the row numbers of matrix B.

1. LU Decomposition

It factors a matrix as the product of a lower triangular matrix (L) and an upper triangular matrix (U).

1. Linear System

Output will be X column vector such that AX=B where B is the input coefficient vector and A is the square coefficient matrix.

1. Determinant

Output will be the determinant of the provided square matrix.

1. Inverse

Output will be the inverse matrix of provided square matrix, if the matrix is invertible one.

1. Expression Evaluation

You can perform matrix expression on maximum of five matrices provided by you.

1. Mandelbrot

Here you will give the real and imaginary axis’s minimum, maximum values and also the width, height pixels to generate the Mandelbrot set and its image. The inputs will create a plot of complex numbers in complex plane.

1. Sorting

This option will provide a sorted list of the uploaded list in a list in ascending/ descending order.

1. Random Matrix

Here you will get a random matrix with the number of rows and columns you provided.

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