

SPL-1 Project Proposal Form, 2023
Institute of Information Technology (IIT)
University of Dhaka

Student's Name:	Mohammed Yasin		
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Finding the Solution of Linear Equation System			
<p>Project Description: There are three types of linear equation system- i) Normal Equation, ii) Over-deterministic System, iii) Under-deterministic System. Each of the systems can be solved using three methods- i) Ordinary Least Square, ii) Kaczmarz Method, iii) Co-ordinate Descent Method.</p> <p>Tasks that I will follow:</p> <ol style="list-style-type: none"> 1. Basic operations- <ol style="list-style-type: none"> a) Matrix Dot Product b) Matrix Addition c) Matrix Multiplication d) Matrix Norm e) SVD- <ol style="list-style-type: none"> i. Eigen Value ii. Singular Value iii. Orthonormal Matrix Calculation f) Pseudo Inverse of Matrix Calculation 2. Finding the Solution of Linear Equation System- <ol style="list-style-type: none"> a) Normal Equation b) Over-deterministic System c) Under-deterministic System <p>Each of the linear equation system to be solved using three renowned ways-</p> <ol style="list-style-type: none"> a) Ordinary Least Square Equation: $\hat{\beta} = (X^T X)^{-1} X^T Y$ b) Kaczmarz Method Equation: $x^{k+1} = x^k + \frac{b_i - \langle a_i, x^k \rangle}{\ a_i\ ^2} \bar{a}_i$ c) Co-ordinate Descent Method 			
Languages and Tools to be used: C, C++, VS Code, Git, Github			
Supervisor's Name: Dr. Md. Shariful Islam			
Signature of the Supervisor: _____			
Date: _____			

Before the Midterm Presentation:

I confirm that the progress is satisfactory and I am forwarding it for midterm presentation.

Signature of the Supervisor: _____

Date: _____

Midterm Presentation Feedback: