MATRIX MULTIPLICATION ALGORITHMS

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ABSTRACT. Matrix multiplication is used in all areas of computer science, and mathematics. Thus because of its wide spread use, an efficient algorithm for matrix multiplication is very important. The purpose of this paper is to describe a number of key algorithms that are used for efficient matrix multiplication, and when to use the different algorithms. It will also provide a short history of matrix multiplication algorithms, and the current state of these algorithms.

1. INTRODUCTION

Matrix multiplication is the process of multiplying two matrices together. This process is very simplistic, it is only once there are many many multiplications, or very large matrices, that this process begins to slow down, and must be improved.

1.1. **Notation.** We will denote the notation of a matrix as A, and the elements of that matrix are denoted as $a_{i,j}$.

2. MATHEMATICS

Naive matrix multiplication can be computed using the following mathematics.