*Cornell University*

*CS5220 – Applications of Parallel Computing*

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**Homework 4: Topic Modeling in Julia**

## Introduction

### Topic modeling is widely used to summarize major themes in large document collections. The idea for this assignment is to implement and optimize the exponentiated gradient algorithm in Julia.

## Exponentiated Gradient Algorithm

The algorithm was implemented using eps = 1e-5 and the learning rate = 1000. After each interaction, learning rate is multiplied by 0.99 so the algorithm would converge. The algorithm was optimized to be more cache-friendly by calculating the A matrix transpose and then transposing it.

**Parallel Algorithm**

To parallelize the algorithm, the distributed array technique was used.