

# MA 202 Course Project: A numerical method to implement the PageRank Search Algorithm

April 2, 2021

Aadesh Desai *19110116*  
Eshan Gujarathi *19110082*  
Hiral Sharma *19110016*  
Sanjay Venkitesh *19110200*

## **Problem Statement:**

The PageRank algorithm is one of the most common algorithms used by search engines like Google to rank web pages on search results. Each search on the search engine results in multiple web pages that are relevant. The aim of the algorithm is to rank this given set of pages.

The algorithm ranks these pages based on several parameters, the most significant ones being the number and quality of the links to it. Given the list of all links referenced by the set of pages, we determine the rank for a given page based on the number of links referenced to it and their quality.

The rank of the pages is determined by formulating a set of linear equations based on the above mentioned parameters. This linear system results in an eigen value problem which can be solved using an iterative approach.

In this project, we aim to understand the importance of various parameters that influence the rank of a web page. Further, we would formulate the governing equations and analyze the numerical method that is being adopted to solve the eigen value problem.