**A WEIGHT BASED PERSONALIZED RECOMMENDATION USING IDIOCENTRIC AND COLLABORATIVE FILTERING**

**Software Requirements Specification**

**PROBLEM STATEMENT**

We frequently stumble upon applications in e-commerce and the Internet that requires recommending items to users. From ages, many techniques have been proposed for recommending items to users, but as it involves a large dataset most of the techniques are costly in terms of space and time. So an effective and novel way of solving this recommendation problem is of great importance.

**INTRODUCTION**

Purpose:

The inception of the idea sprouted as a combination of the knowledge gained from Algorithms of the Intelligent Web classes and our exposure to Graph Theory. Here, we will develop a novel approach to the problem of recommendation. As a core part of the project, we will build methods to carry out unsupervised dimensionality reduction on the dataset. We will deduce some of the characteristic qualities of the users and construct a custom built profile for each of them. We recommend items to users based on two techniques: Idiocentric Recommendation and Collaborative Filtering.

Scope:

This project is intended to be an academic pursuit which would eventually provide the end user with personalized recommendations. The system will make use of two datasets, viz. User data set and Item data set to train itself to build a user profile that characterizes the behaviour of each individual.

**SOFTWARE REQUIREMENTS**

PYTHON:

Python is a general-purpose, high-level programming language whose design philosophy emphasizes code readability. It is an expressive language which provides language constructs intended to enable clear programs on both a small and large scale with its own built-in memory management and good facilities for calling and cooperating with other programs. Python supports multiple programming paradigms, including object-oriented, imperative and functional programming styles.

CYTHON:

Cython is a programming language based on Python, with extra syntax allowing for optional static type declarations. It aims to become a superset of the Python language which gives it high-level, object-oriented, functional, and dynamic programming. The source code gets translated into optimized C/C++ code and compiled as Python extension modules. This allows for both very fast program execution and tight integration with external C libraries.

NETWORKX:

NetworkX is a Python language software package for the creation, manipulation, and study of the structure, dynamics, and functions of complex networks.

GEPHI:

Gephi is an interactive visualization and exploration platform for all kinds of networks and complex systems, dynamic and hierarchical graphs. We use it to visualize the Item graph while displaying the output.

PICKLE:

Pickle is the standard mechanism for the object serialization and deserialization. It was developed as a pure python pickle module in its beta version. We use pickle to store graph objects.

NUMPY:

NumPy is an extension to the Python programming language, adding support for large, multi-dimensional arrays and matrices, along with a large library of high-level mathematical functions to operate on these arrays.

GIT VERSIONING SYSTEM:

In software development, Git is a distributed revision control and source code management (SCM) system with an emphasis on speed. Every Git working directory is a full-fledged repository with complete history and full revision tracking capabilities, not dependent on network access or a central server. We use it to effectively control our software development.

PYQT:

PyQt is a Python binding of the cross-platform GUI toolkit Qt. It is one of the tools for GUI development. We intend to use this platform to have an interactive UI for using our recommendation system.

**HARDWARE REQUIREMENTS**

This being a software application project, we are coming up with an algorithmic solution to solve the problem of recommendation. Hence, the hardware requirements are minimal and basic.