

**A Synopsis  
on  
ELECTIVE SUBJECT  
RECOMMENDATION SYSTEM**

**Submitted by**

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## **ABSTRACT**

Recommendation Systems are an ongoing research that is applied in various domains like music, movie, . ELECTIVE SUBJECT RECOMMENDATION SYSTEM is considered a challenged domain that has not been explored thoroughly. It benefits students who need suggestions and also enhances elective subjects selection processes during the selection. This project introduces a recommendation system for university elective courses, which recommends the courses based on the similarity between the course templates of students. This project utilizes some popular algorithms: Angular, Euclidean, Manhattan, Hamming, Dot and compares their performance on a dataset of academic records of university students. The experimental results show that applying these algorithm in this domain is superior to collaborative based with 86 percent of accuracy.

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## **INTRODUCTION**

In higher education, students are faced with difficulties when choosing elective subjects. Most of the students select elective subjects outside their major because they perceive the subjects to be exciting. Some of the difficulties emanate from the limited capacity in some elective subjects as well as timetable clashes with compulsory subjects which make students choose other elective courses. Finding the most suitable elective subject from the available ones can be achieved by using a recommendation system. By analyzing data on the subjects that students completed, it is possible to categorize a student's interests. The ability to predict student enrolment patterns for courses provides an opportunity to be effective in allocating resources and providing a high-quality learning experience. Predicting student grades in future courses before they take them is an essential tool that can be used to assist students with choosing elective subjects. The purpose of recommendation systems is to recommend a product to a user that would possibly interest them based on the user profile. Recommender systems must not only focus on broad outcomes such as courses but also on recommending learning resources and activities that will assist students in passing the recommended subject. Such recommendations can take into consideration the student's needs, interests, preferences and past activities.

## Technologies / Software Requirements

- **Python:** Python is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation. Python is dynamically-typed and garbage-collected. It supports multiple programming paradigms, including structured (particularly procedural), object-oriented and functional programming.
- **NumPy:** NumPy is a library for the Python programming language, adding support for large, multi-dimensional arrays and matrices, along with a large collection of high-level mathematical functions to operate on these arrays.
- **Pandas:** pandas is a software library written for the Python programming language for data manipulation and analysis. In particular, it offers data structures and operations for manipulating numerical tables and time series. It is free software released under the three-clause BSD license.
- **Annoy:** Annoy (Approximate Nearest Neighbors Oh Yeah) is a C++ library with Python bindings to search for points in space that are close to a given query point. It also creates large read-only file-based data structures that are mmaped into memory so that many processes may share the same data.

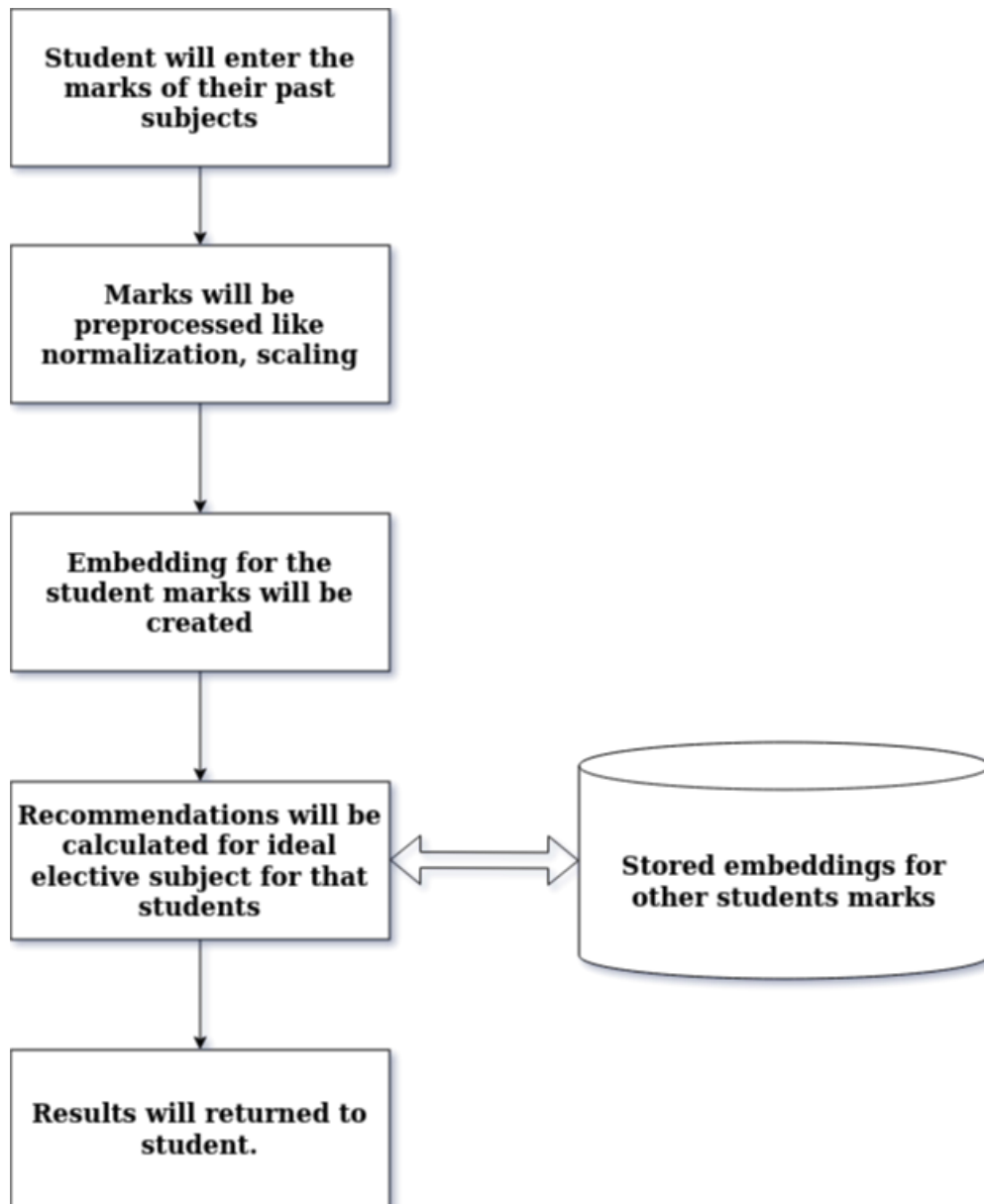
## Hardware requirement / Hardware Used

<b>RAM</b>	4GB or Higher
<b>System Type</b>	64-bit operating system, x64-based processor
<b>Operating System</b>	Windows, Linux
<b>Processor</b>	Intel(R) Core(TM) i5-1035G1
<b>Processor Speed</b>	1.00GHz, 1.19 GHz

## Modules Description

- **User Interaction:** User Interaction will be provided in this project so all the uses of the project can get their recommendations interactively. This UI will enable the user to enter their scores of past subjects and get recommendations.
- **Data Preprocessing:** Data preprocessing will be done on the marks of the students like data normalization, data scaling so that data can be presented in the required format.
- **Recommendation Calculation:** It will be the place which will work as a backend for the project, where all the marks of the student will be sent and embedding for that student will be calculated and will be compared with all the other embeddings of the subjects.

## Control Flow





## Outcome

The main outcome of this project, which we want to achieve through this project, is that any student can get recommendations for their elective subjects in the new semester according to their past performance on curriculum subjects like 10th, 12th, Graduation, Post-Graduation.

**Research Paper:** In this paper we will try to explain each and every steps we will perform, all the comparisons done on different different dataset, different different algorithms. It will be a detailed walkthrough of our work in this project for elective subject recommendation system.

## Gantt Chart

