# Group 5 Project Ideas

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## 1 Digital piracy and how it can be reduced for Streaming Services

### 1.1 Problem

In today's day and age, with internet being easily accessible, more and more people are indulging in digital piracy. These people are mainly law abiding citizens but they still don't shy away from indulging in digital piracy even though it is illegal. This also leads to losses for the original owners of the product.

### 1.2 Objectives of Project

There are many reasons why people indulge in digital piracy and we will try to analyse them using a game theoretic approach.
We will also propose a mechanism which can be used by streaming services to reduce the number of people pirating the media and also take advantage of the pirate sites by taking some inspiration from them to increase their own profits.

### 1.3 Deliverables

A detailed analysis of reasons and incentives people have for indulging in digital piracy using a game theoretic approach.
A design of a model which can be used by streaming services to incentivise people to take their subscription instead of pirating.

# 2 Course recommender for IITK students

## 2.1 Problem

Juniors usually are confused during the add-drop period and seek recommendations from friends, seniors for which course to pursue. There is no medium for seeking guidance except messaging a few seniors the person knows.

## 2.2 Objectives of Project

Design a recommender system for a student based on his record.

- Use collaborative filtering - Given the courses, the student has undertaken till now and the ratings presented to them, our system should suggest courses based on choices and ratings of peers at IITK.
- People tend to give higher weightage to people who are either friends or seniors in their department itself. Hence we can introduce the concept of trust. Trust statements could be that person is a senior in the same department or person lives in the same wing as the user. We can use the algorithm proposed in "Application of game theory techniques for improving trust based recommender systems in social network".
  The basic idea of the algorithm is: The ratings of trusted users are used to make predictions. Pareto dominance concept is used to calculate the effectiveness factor of each trusted user of the active user. Those who are non-dominated have a higher effect on recommendation than those of the dominated users.
- Issue: Collection of such extensive data from students.

## 2.3 Deliverables

Train a full recommender system which outputs a list of recommended courses for the user. If time permits then can work on hosting a web page.

# 3 Mechanism for Peer Grading in Courses

## 3.1 Problem

In an online semester, subjective assignments are submitted digitally. As such, it becomes easier to peer grade assignments by virtue of easy obfuscation of personal data to prevent any partiality on the part of the peers.

## 3.2 Objectives of Project

We plan to build upon the work of https://dl.acm.org/doi/abs/10.1145/2724660.2728676 to make a better model of a student, model their competence, and to ensure a feasible online peer grading strategy wherein we can ensure a sufficient number of reviewers, the competence of said reviewers, and proper feedback for the students.

## 3.3 Deliverables

Modelling a mechanism wherein the grade of the student is somewhat contingent on the amount of grading the student does such that the student does not need to review if they get a good grade solely on their academic showing. Also, we plan to try to reduce the effect of competence by scaling the marks the reviewer gets for their peer review depending on how accurate they are.