

# TSEC Hacks 2020

## Machine Learning

### 1) Movie Recommendation System.

The prototype should be able to solve the following problems.

- a. Given a particular user\_id, find the genre he is most likely will love watching.
- b. Given a particular user\_id, find the users he is most similar to
- c. Given a particular movie\_id, find the other movies which are the most similar to it.

Dataset: <https://grouplens.org/datasets/movielens/>

Use 'Recommended for education and development section' full dataset of 265 MB.

### 2) Topic Detection System

If-else is a popular topic in Computer Programming in the Java language.

1. Problem Statement: Create an application using NLP that detects whether a given statement is from If-Else chapter or not.

2. Dataset: Link for a few books is given below. Extract the data by scraping the PDFs.

Example:

Input: "If - Else is a conditional statement."

Output: From the If-Else Chapter.

Input: "I will give a party if Sachin scores a century today."

Output: Not from the If-Else Chapter.

[https://drive.google.com/drive/u/0/folders/1ScmXLB\\_pMKylTIQVYzc\\_bdy4yMNM5hoXM](https://drive.google.com/drive/u/0/folders/1ScmXLB_pMKylTIQVYzc_bdy4yMNM5hoXM)

You can use this link to find other books - <https://libgen.is/>

# Blockchain

## 1) Blockchain based E-Voting system

Currently, voting in India is done using an Electronic Voting Machine (EVM), which has several problems, namely time-consuming nature, needs a human resource for counting votes/managing, can be tampered with, etc.

A Blockchain-based e-voting system can not only make the whole voting procedure, secured and tamperproof but also allows voters to vote from their smart devices, thus reducing the time consumed.

Counting votes would also be easier and will be subject to fewer inaccuracies and more transparency.

## 2) Blockchain in Healthcare

Healthcare is an industry where the ability to access information or any omission in a patient's record could be the difference between life and death.

Maintaining patients' previous records is an integral part of the Healthcare Industry. The current scenario puts the onus on the patients to retain physical copies of their medical history which pose inherent challenges like portability and accessibility.

A blockchain-based solution is required that allows patients to add their medical records to the blockchain securely.

This information should be encrypted and only accessible by authorized personnel, which is allowed by the patient.

Such a tamper-proof and secured system would easily bypass the drawbacks of the current paradigm, without sacrificing functionality.

# Web/Android App

## 1) Ecommerce

According to [a recent report by Accenture](#), 91% of consumers are more likely to buy from companies who remember them and provide relevant offers. Further, 83% of them are also willing to share their data in exchange for a personalised experience.

Personalisation can change the current scenario in the Ecommerce Industry.

Make a personalised Ecommerce Website of your choice.

Suggestions:

1) The website should be able to track customers purchases and social media accounts and make a profile out of it.

2) Using this profile:

1. Personalised Home Page can be created; for example, a fitness enthusiast can be automatically redirected to the sports section. It could also have a 'pick up where you left off' section for incomplete orders.
2. Recommendations can be made based on the customers browsing history and purchases/inventory.
3. Further geotargeting can be used to make campaigns based on the user's location.
4. Unique campaigns can be made for the customer during special occasions, for example - 10% discount on cakes on birthdays.
5. Exit-intent campaigns can be used to encourage customers to complete transactions.

## 2) Social Cause

### *The Apprentice Project*

#### **Brief:**

The Apprentice Project (TAP) team (alumni from IIM, TFI, and YIF) aims to build life skills in low-income kids by placing selected high-skilled volunteers in under-resourced schools for one year.

Currently, TAP works with 2500 students across 20+ schools with 200 facilitators.

Every Saturday for three hours the volunteers/facilitators mentor and teach in one of the following verticals based on their skills: Drama, Dance, Music, Public Speaking, Ultimate Frisbee, Electronics & Coding and Visual Arts.

#### **Problem Statement:**

##### **1) Selection**

The primary job of the TAP team is to select 250 facilitators from 2500 applications; for this, they currently use manual and excel based methods for sending emails and keeping information about the volunteer.

Create a volunteer management solution which can help the TAP team select the facilitators from the three-stage process so that all the emails are automated, and the serial numbers are generated automatically, etc.

The solution should make it easier for one person to manage everything, similar to CRM and ERP software.

##### **2) Operation**

For TAP's Operations team create a solution which can automate the communication with facilitators & provide a dashboard to the admin for facilitator management.

Currently, they use Google forms & sheets to collect data from facilitators, and admin staff manually do everything, including sending out WhatsApp messages.

Resources:

Refer "Selections" and "Operations" from TAP Processes PDF

[https://drive.google.com/file/d/1-GqtA6AeHPtCKHWdNnxk63\\_P578SP06j/view](https://drive.google.com/file/d/1-GqtA6AeHPtCKHWdNnxk63_P578SP06j/view)

PS: This problem statement requires WhatsApp integration. Please attempt to utilize the relevant API queries.