SCHOOL OF ELECTRONICS ENGINEERING
KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY
Deemed to be University, Bhubaneswar - 751024

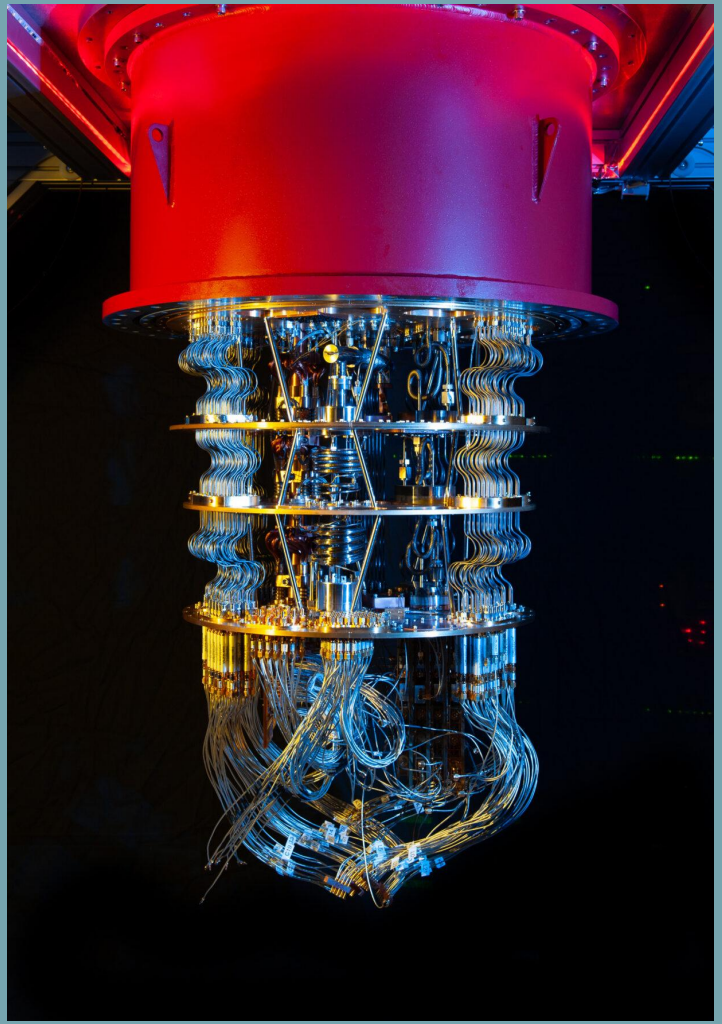
Minor Project (EC 3082)

ELECTRONIC GREEN LIBRARY (eGL)

Supervisor: Prof. Manoj Kumar Parida

(1904215) Mr. Rishabh Panda
(1904195) Mr. Ashwin Raj
(1904206) Mr. Jai Singh
(1904161) Mr. Rounak Raj

“A software and machine learning based SOLUTION to counter the negative impact of industrial paper production on NATURE and the ECONOMY.”



Introduction

During the COVID-19 pandemic students and working professionals all over the world transitioned to **electronic media** that changed the global work culture.

The future is digital and needs integration and a **hybridized** system to evolve.

Therefore, we students from the department of electronics & telecommunication have decided to develop a software based solution to tackle the impact of:

- Large-scale industrial paper production on **environment**.
- **Institutional & courier charges** for the distribution of study materials/textbooks per semester in an academic year.

Problem Statement

Since the pandemic has begun, students have been receiving a good amount of books and study materials delivered via courier per semester.

The materials can be divided into core and non-core domains. For instance, **Engg. Maths**, **Signal Processing** and **Networking** find their place under core subjects, whereas **P. Com.** and **Biology** are listed under the non technical wing of syllabus that demands theoretical expertise.

Therefore, students should always have a choice to receive a particular volume in either electronic format (PDFs, ODP, Doc) or hardcopy, depending upon their need in this **online world of education**.

This customized mechanism will help a learner optimize his study routine by reading books from a combination of:

- **Electronic devices** (laptops/smartphones/tabs) and
- **Paperback** (hardcopy).

This, as a consequence, will not only help save the transport & delivery charges but will also exponentially reduce the production amount of paper in institutions on a global scale.

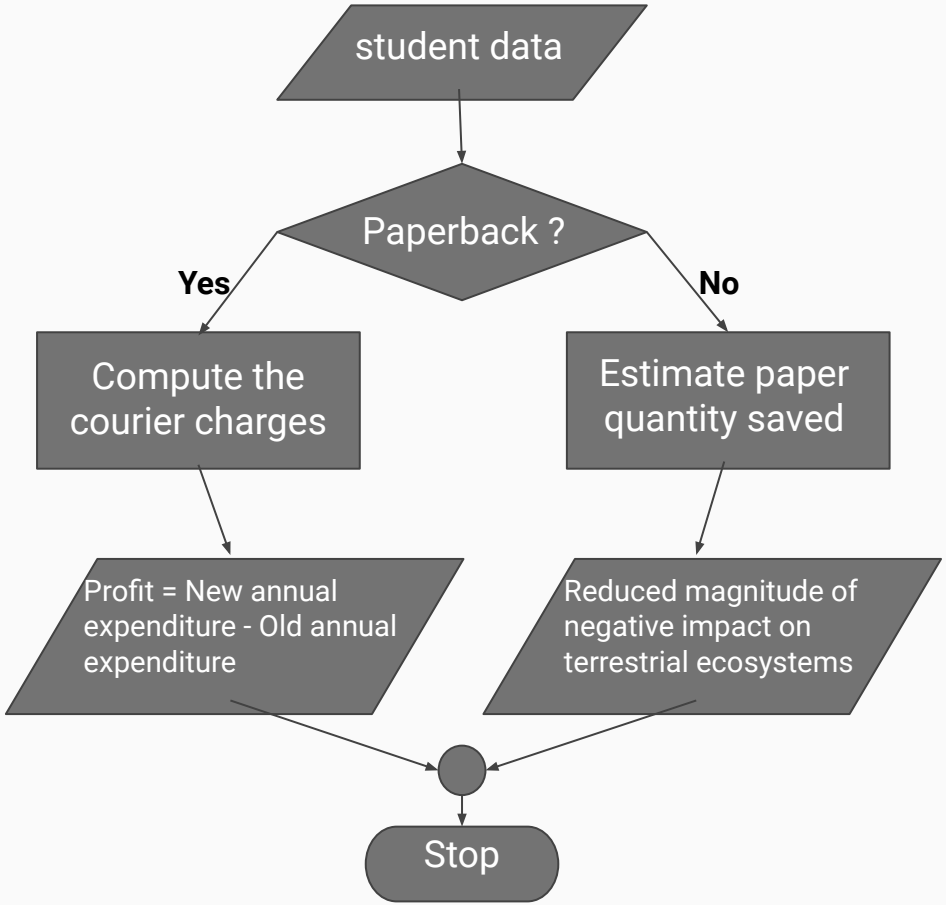
The Solution

The solution to this problem lies in building an efficient software integrated with the **University Student Portal (SAP)** that can handle the large data by collecting user inputs and predict the student inputs in future semesters using ML algorithms. The mechanism then stores the student data and **computes the quantity** of material that needs to be delivered via courier and electronic formats.

Lastly, the charges are estimated per student and an analysis is performed that displays the quantity of **paper saved** per academic semester/year.

Tools and technologies to be implemented:
1. Programming & Analysis: C++, Python
2. Data Visualization: MATLAB / Octave

Algorithm



Advantages

- Reduction in deforestation.
- Better energy management for the production process.
- Decrease in the amount of industrial toxins used to create pulp and bleach.
- Boost in the efficiency of water treatment.
- Promotes the concept of three R’s (Reduce, Reuse & Recycle)

IT industry once predicted that its emergence is to make paperless offices but its amazing to find that about 95% of office work across the world is still done on paper.

42% of all global wood harvest is used to make paper. Is it really worth it to cut down our life saving trees for this product?

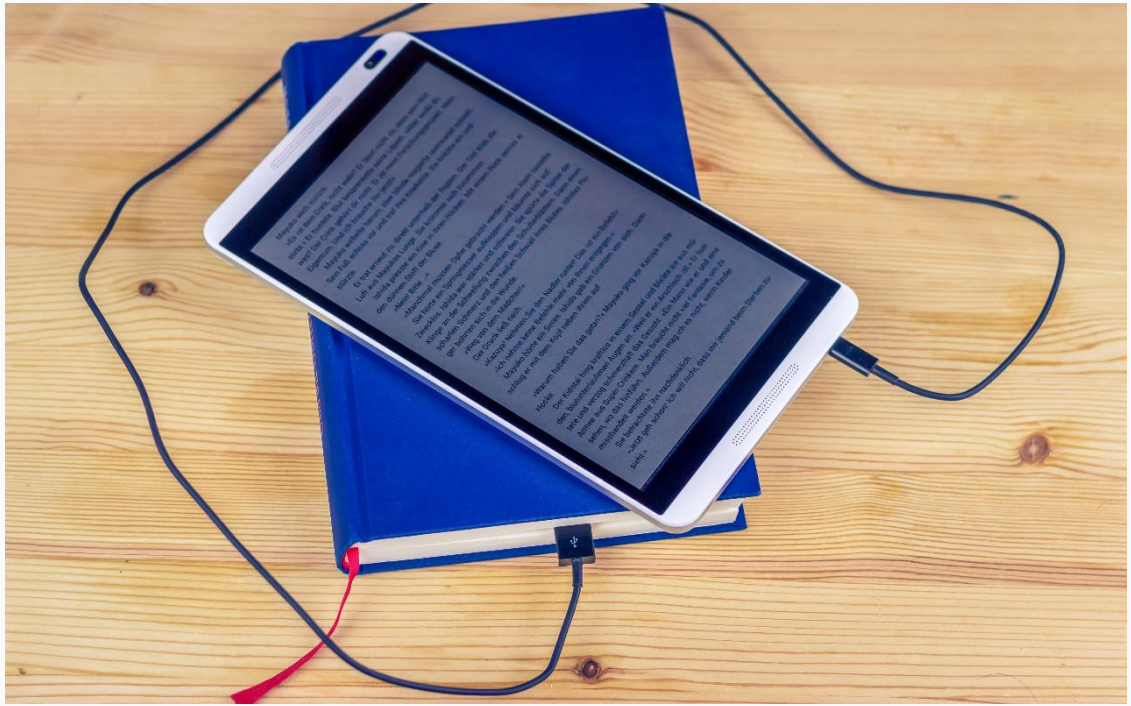
Also the bleaching reagents without proper treatment that get released into river bodies prove to be graveyard for hydrological ecology.

According to a survey, an average tree gets converted in to 12000 A4 sheets. As per our calculations, we require almost 300 trees to run an engineering semester (6 month duration) and a tree requires a minimum of 3 years to grow and become mature.

Thank you!

Contact details:

- Rishabh Panda
  +91 79819 27240
- Jai Singh
  +91 95701 85175
- Ashwin Raj
  +91 6200 639 703
- Rounak Raj
  +91 8340 395 986



Source(s)/bibliography:

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- https://www.researchgate.net/publication/281761323