App Development for NGOs

<u>Problem Statement:</u>

Design a Mobile or a Web Application that uses the concept of Data Visualization and provides the Logistics Information for the smooth running of a Non-Governmental Organization. The NGO would be the one that directly benefits children by helping them in Education, Healthcare and Livelihood in remote villages and slums across different states of India.

<u>Objectives related to the following areas that contribute to an integrated approach to logistics could be targeted:</u>

- Fundraising.

  The typical fundraising process includes: soliciting funds from the public, mechanisms for donations, keeping track of donors, providing Donation certificates, releasing information about how funds were used to donors

- Keeping a track of the child's academic statistics such as grades, consistency in marks and overall development.
- Efficient long-term strategic planning.
- Greater cooperation with mass media.
- Efficient Resource management, including human resources and warehousing of supplies and materials.
- Offering feedback to the community at large.

Keep in mind that a NGO has different departments such as Marketing, Administration, Purchase, Compliance etc and their separate needs must be considered by the application.

Focus should be on innovative features with ease of use for NGO workers using the App, so that insights can be gained effectively.

CYBER SECURITY

Problem Statement: -

Security is the main concern for data sharing due to its vulnerabilities and confidentiality.

Create a portal for sharing of files and data between many clients (users), keeping in mind security concerns that such an application would have to take into account.

Sample Objectives:

- Confidentiality - files should be visible only to desired parties. Use of encryption should be made where ever necessary
- Authorization - decrypted data must be visible only to users authorized to view it
- Authentication - Secure login is a must. Consider password security and two factor authentication
- Privacy - file sharing permissions must be strictly enforced
- Database security- Consider how your data is stored and how it can be protected against unauthorized access
- Malware protection - protect against files that could potentially damage your application or other systems
- Usability- an end user should not be intimidated by security features or by many complicated options

The focus should be on anticipating various security attacks and provisioning against them. Clearly mention the strengths and vulnerabilities of your system.

Ecommerce

Identity Management | Verification, Personalization and more

Problem statement: We need an ability to identify a customer interacting with our site:

1. Across devices - Mobile, Laptop/Desktop
2. Across multiple sessions - should be able to identify users over multiple sessions
3. Channels - Store, Mobile app, Website
4. Source - Organic search, Social media, Paid to advertise, Print Campaigns, TV commercials

Once identified, a complete profile of the customer should be created based on all available data, including but not limited to multiple social media identities, personal preferences based on all interactions, verified address book.

The expected solution: needs to have the presented ideas fleshed out as a working prototype. API's, Database design, Co-relation logic needs to be working. The UI focus will not be on the e-commerce platform but to demonstrate multiple interactions with a brand.

An e-commerce business should be able to personalize their online site based on the data collected. Possibilities for personalization need to be demonstrated with a minimum of three examples

GAMIFICATION

The Engineering syllabus consists upto 6 new subjects every semester. The concept is "Serious learning, not so boring." The intent of this problem statement is to develop a smart and engaging solution to gamify learning experiences. Choice of engineering subject is left to you.

The solution must contain the following application of typical elements of game playing such as:

- Point scoring and competition with others
- Rules of play to ensure a captivating yet educating experience
- Rating sub topics based on quizzes and repeating or revising the course after a 30 day cycle, meeting daily goals, having alternate solutions to one problem and having diagrammatic presentations to show the challenges, objects and scenarios
- Progressively harder difficulty 'levels'
- Incentives beyond points, badges or leaderboards that could be applied in this specific context in order to make learning courses that people actually enjoy
- Adaptability to students with different strengths and weaknesses. The games for users should teach content and help in memory retention and focus, rather than being "learning theory" games.
- Incentive to make repeating a lesson intrinsically motivating and not boring, as repetition aids long-term retention.

Don't overwhelm with detail—keep it as simple as possible, and stay general, if you can, so that you do not lose attention or hinder creativity. The focus should be on creativity of features and how appealing your application will be to students.

ML in Healthcare

Cancer is the second leading cause of death globally, and is responsible for an estimated 9.6 million deaths in 2018. Globally, about 1 in 6 deaths is due to **cancer**. Can we use open data available to gain insights to help with the human effort against cancer by aiding any of the given objectives?

Objectives:

- Personal point of view: To predicting likelihood of incidence using a person's demographic / medical history
- Insurance company point of view: To assess cancer risk and decide appropriate policy premium
- Medical researchers point of view: To devise a method to infer the effectiveness of two different treatment plans
- Pharmaceutical companies point of view: To decide which research areas are promising in the coming decade

Suggested Data Sources:

https://public.opendatasoft.com/explore/dataset/cancer-databases/table/

https://archive.ics.uci.edu/ml/datasets/lung+cancer

https://www.kaggle.com/c/msk-redefining-cancer-treatment

https://www.ruralcenter.org/population-health-portal/data/using-claims-data

https://healthdata.gov/

Focus on which features in a dataset provide maximal insight and how they can be preprocessed for efficiency and effectiveness. Only a minimal UI (GUI/CLI) is required, but there has to be some convenient way to interact with the ML model to make new inferences.

You can also use any open data sources that have not been suggested. There is no restriction on the country/region to which data relates to or the type of cancer that is under consideration.