



TSEC CODESTORM

PRESENTS

CODEISSANCE 2024

PROBLEM STATEMENTS

WEB/APP PROBLEM 1

Comprehensive Alumni Engagement Platform: Enhancing Connections, Philanthropy, and Mentorship

Problem Statement:

The college alumni association is facing challenges in maintaining engagement, facilitating donations, providing valuable mentorship to current students, tracking alumni success stories, and organising events. There is a need for a comprehensive platform to streamline alumni interactions, promote philanthropic support, and provide guidance and mentorship.

Problem Description:

The alumni association struggles with maintaining engagement and fostering meaningful connections between alumni and the college, limiting opportunities for mentorship, donations, and networking. To address this, an integrated web and mobile platform will be created to centralize alumni activities. This platform will allow alumni to easily register, connect with each other, offer mentorship to current students, donate to the institution, share their success stories, and participate in college events. By providing a secure, user-friendly, and scalable solution, the platform will strengthen alumni ties, enhance engagement, and ensure ongoing support for the college and its students.

WEB/APP PROBLEM 1

Features

- A secure donation system that allows alumni to easily contribute to college projects and initiatives.
- Tools to connect alumni to students based on their industry, location, and interests, fostering mentorship and professional collaboration.
- A searchable directory of alumni, facilitating connections based on specific criteria such as graduation year, profession, and geographic location.
- A tool for managing alumni events, reunions, and workshops to foster community and engagement.

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WEB/APP

PROBLEM 2

Bridging the Financial Literacy Gap: Empowering Individuals for Smarter Financial Decisions

Problem Statement:

Despite the importance of financial literacy in personal finance management, many individuals lack the knowledge and skills needed to make informed financial decisions. This knowledge gap leads to poor financial outcomes such as debt, inadequate savings, and unwise investments. There is a need for educational solutions that simplify complex financial concepts and empower users to make better decisions in areas like budgeting, saving, investing, and retirement planning.

Problem Description:

Financial illiteracy is a widespread issue affecting individuals of all ages and backgrounds. Without proper financial education, people struggle to manage their income, understand debt, save effectively, and invest wisely, leading to long-term financial insecurity. Many existing solutions are not designed to cater to a broad audience, are not user-friendly, or do not provide personalised feedback, making them less effective in educating users. The challenge is to create an interactive and engaging platform that improves financial literacy by offering comprehensive learning experiences tailored to individual needs, while ensuring inclusivity, accessibility, and data security.

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WEB/APP

PROBLEM 2

Features:

- Design user-friendly interfaces for financial education platforms, ensuring accessibility and inclusivity.
- Develop interactive learning modules covering various financial topics, including budgeting, saving, investing, and retirement planning.
- Implement gamification elements to make learning fun and engaging for users of all ages.
- Integrate real-world examples and case studies to demonstrate practical financial concepts and strategies.
- Provide personalised recommendations and feedback based on user interactions and progress.

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WEB/APP

PROBLEM 3

Elderly Care Assistance App

Problem Statement:

Develop a user-friendly web/app platform that connects elderly individuals with caregivers, family members, and health professionals for remote assistance. The platform should offer daily task reminders, video calling, health tracking, emergency alerts, and access to a marketplace of verified caregivers to ensure their safety and well-being.

Problem Description:

The elderly population is growing, and many older adults live independently without daily physical support from family members or caregivers. This can lead to difficulties in maintaining regular routines, managing health conditions, and receiving immediate help during emergencies. The "CareMate" app aims to address this gap by providing a digital solution that connects elderly users with caregivers, health professionals, and family members, ensuring their safety, well-being, and comfort.

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WEB/APP

PROBLEM 3

Features:

- Set reminders for medication, appointments, and daily routines to help users stay on track.
- Enable video calling and messaging to connect elderly individuals with caregivers and family members.
- Notify family or authorities in case of a medical emergency through an emergency alert system.
- Monitor vital health metrics, such as heart rate and sleep patterns, by integrating with wearable devices.
- Provide a marketplace to find and hire verified caregivers or nurses for elderly assistance.

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WEB/APP

PROBLEM 4

Digital Footprint Management

Problem Statement:

Develop a platform that allows users to manage and organise their digital footprint, including social media accounts, personal data, and digital assets. The platform should enable users to view and control their current digital presence and designate how their data is handled posthumously, ensuring that their online footprint aligns with their wishes and remains consistent with their personal and family values.

Problem Description:

In today's digital world, individuals leave behind extensive digital footprints through social media, online transactions, and stored personal data. Without proper management, users are exposed to risks like unauthorised access, data breaches, and a misalignment between their online presence and personal preferences. To address these challenges, the proposed platform offers a comprehensive solution for managing both current and posthumous digital footprints. Users can monitor and control their online presence, manage social media accounts, track personal data, and oversee digital assets. Additionally, the platform allows users to set instructions for how their digital legacy should be handled after their passing, such as account management and data privacy preferences. By offering tools for both ongoing management and future planning, the platform empowers users to take full control of their digital lives and ensure their legacy aligns with their wishes.

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WEB/APP

PROBLEM 4

Features:

- Create an intuitive dashboard that provides a comprehensive view of users' digital footprints, including social media accounts and personal data for streamlined management.
- Implement robust features that allow users to set data privacy preferences and security measures to safeguard against unauthorised access.
- Enable users to specify how they want their digital legacy managed after their passing, ensuring alignment with their personal wishes.
- Allow users to designate trusted individuals who can manage their digital assets and accounts in the event of their passing.
- Streamline management by integrating the platform with various online services, providing activity monitoring and alerts for any changes or unauthorised access.

AI/ML

PROBLEM 1

Enhancing Placement Success with Intelligent Simulation

Problem Statement :

The disconnect between academic training and real-world placement success leaves students underprepared for interviews and group discussions. Traditional methods, relying on generic mock interviews and limited feedback, fail to provide personalised guidance and realistic simulations. This leads to heightened anxiety and poor performance during interviews, reducing placement opportunities. An AI-powered solution is needed to replicate real-world scenarios, offer immediate feedback, and tailor preparation strategies to individual needs, ensuring students are well-equipped for success.

Problem Description :

Placement preparation, a crucial phase in a student's academic journey, often involves rigorous practice and feedback. However, traditional methods can be time-consuming, lack personalised guidance, and may not adequately simulate the real-world interview experience. This leads to a gap between classroom learning and the demands of actual placements, resulting in suboptimal performance for many students.

AI/ML

PROBLEM 1

Features :

- Replicates real-world interview scenarios with AI-driven interviewers that ask challenging questions and provide immediate feedback on communication skills, body language, and overall performance.
- Simulates group discussions to enhance collaborative problem-solving and communication skills, preparing participants for teamwork in interviews or work environments.
- Analyse interview and discussion performance, identifying areas for improvement and offering targeted recommendations with tailored practice questions.
- Connects participants with industry experts for personalised advice while suggesting relevant study materials, practice problems, and online courses based on individual performance.

AI/ML

PROBLEM 2

Streamlining Access to Government Schemes for Citizens

Problem Statement:

Many citizens are unaware of the government schemes they are eligible for or face challenges navigating complex application processes, resulting in underutilization of available benefits and services. There is a need for a platform that simplifies access to government schemes, enabling citizens to easily identify eligible programs, understand their benefits, and complete application processes with minimal barriers.

Problem Description:

Government schemes offer critical support in areas such as education, healthcare, housing, agriculture, and employment. However, the lack of a centralised system and complicated bureaucratic procedures make it difficult for many citizens, particularly in rural and underprivileged areas, to take advantage of these programs. A digital platform that simplifies and streamlines access to government schemes can empower citizens by providing personalised recommendations, automated eligibility checks, and step-by-step assistance. This platform would be designed to overcome the barriers of accessibility, information dissemination, and user experience, ensuring that citizens from all socio-economic backgrounds can access the benefits they are entitled to with ease.

AI/ML PROBLEM 2

Features:

- The platform will use AI to suggest tailored government schemes across sectors such as education, health, and housing based on the users profile.
- The platform will guide users through the entire application process, breaking down complex forms and procedures into easy-to-follow steps.
- Users can track the status of their applications in real-time, receiving updates and notifications at each stage of the approval process.
- The system will perform an automated eligibility assessment based on the user's input, cross-referencing with the criteria of available schemes.

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AI/ML

PROBLEM 3

Predictive Maintenance for Public Infrastructure

Problem Statement:

Design a system that predicts maintenance needs for public infrastructure, such as bridges, roads, and public transit systems. The tool should analyse historical data, usage patterns, and environmental conditions to optimise maintenance schedules and prevent infrastructure failures.

Problem Description:

Maintaining public infrastructure is crucial but challenging, as traditional approaches based on fixed schedules or reactive measures can lead to inefficiencies, higher costs, and potential failures. Without accurate predictions, resources may be misallocated, and infrastructure may degrade faster than expected. The proposed system seeks to improve infrastructure management by using advanced algorithms to predict maintenance needs. By analyzing historical data, real-time usage patterns, and environmental conditions (like weather and traffic), it will provide insights for optimizing maintenance schedules. This predictive approach aims to identify potential issues early, extend infrastructure lifespan, enhance safety, and reduce maintenance costs.

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AI/ML

PROBLEM 3

Features/Objectives:

- Analyzes past maintenance records and performance metrics to identify trends and inform future maintenance predictions.
- Tracks current usage patterns, such as traffic flow and public transit ridership, to assess strain on infrastructure and identify urgent maintenance needs.
- Evaluates weather and environmental factors that impact infrastructure integrity, aiding in proactive maintenance planning.
- Utilizes advanced algorithms to forecast maintenance requirements, optimizing schedules and resource allocation to prevent infrastructure failures.
- Provides stakeholders with a visual representation of infrastructure health, including alerts and notifications for maintenance needs, ensuring quick and informed decision-making.

AI/ML

PROBLEM 4

AI-Powered Anti-Money Laundering (AML) System

Problem Statement:

Financial institutions struggle to effectively detect and prevent money laundering due to sophisticated criminal methods and high false positive rates in traditional rule-based AML systems. There is a need for an advanced AI-powered AML system to improve real-time detection, accuracy, and efficiency.

Problem Description:

Traditional anti-money laundering (AML) systems rely on rule-based approaches that often generate a high number of false positives, leading to inefficiencies and delayed responses. As criminal techniques evolve, these systems become less effective at identifying genuine suspicious activities. Financial institutions require a more advanced solution that leverages AI to enhance the detection of money laundering, reduce false positives, and streamline the compliance process. This will enable quicker and more accurate identification of suspicious transactions, improving overall security and regulatory adherence.

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AI/ML

PROBLEM 4

Features:

- Use AI to analyze transactions as they occur, identifying suspicious activities instantly and reducing the time required to flag potential money laundering.
- Employ machine learning algorithms to detect unusual patterns and behaviours that may indicate money laundering, even those that deviate from traditional rules.
- Implement AI-driven risk scoring and contextual analysis to minimise false positives and focus investigations on high-risk transactions.
- Integrate with various data sources, including transaction histories, customer profiles, and external databases, to provide a comprehensive view of potential risks.
- Generate detailed reports and alerts for compliance purposes, including actionable insights and recommendations for further investigation.

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SOCIAL CAUSE

PROBLEM 1

Streamlining NGO Operations and Volunteer Collaboration

Problem Statement:

Non-Governmental Organizations (NGOs) often struggle to effectively manage their operations, including recruiting volunteers, coordinating resources, and promoting their causes. The lack of a centralized platform for managing these tasks leads to inefficiencies in executing social initiatives. A solution is needed that not only matches volunteers to projects but also offers tools to streamline NGO management, increase visibility, and improve overall coordination.

Problem Description:

NGOs face a variety of operational challenges, from finding the right volunteers to managing ongoing campaigns and raising funds. Existing platforms focus primarily on one aspect without addressing the holistic needs of NGOs, such as resource allocation, fundraising, project visibility, and reporting. An integrated crowdsourcing platform that offers features for volunteer matching, resource tracking, project promotion, and reporting can help NGOs operate more efficiently, freeing up time to focus on their social causes.

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SOCIAL CAUSE

PROBLEM 1

Features:

- Analyses volunteers and matches them with suitable NGO projects based on project needs, geographical location, and time availability.
- NGOs can list projects, set timelines, and track progress. They can assign tasks, monitor resource needs, and track volunteer contributions to ensure efficient project management.
- NGOs can create fundraising campaigns for specific projects, utilizing user-friendly donation features. Supporters can contribute and easily share campaigns on social media.
- NGOs and volunteers can post their work directly to various social media platforms from the platform, enhancing visibility and attracting support. Users can also track analytics on engagement and reach.
- Volunteers and donors can provide feedback after projects or donations, helping NGOs build trust and improve their processes.

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SOCIAL CAUSE

PROBLEM 2

Accessible Travel Guide for People with Disabilities

Problem Statement:

Design and develop an Accessible Travel Guide platform for people with disabilities. The platform should provide detailed, personalized travel assistance, including accessibility information for destinations, accommodations, transport options, and other services, ensuring that people with different types of disabilities can plan trips with confidence and ease.

Problem Description:

Travelling can be a challenge for people with disabilities due to inaccessible destinations, inadequate transport options, or a lack of information on accommodations. This project aims to create a web or mobile app that acts as a comprehensive travel guide for individuals with physical, sensory, or cognitive disabilities. The platform will focus on providing verified information about accessibility features, accommodations, and nearby services, making travel planning more convenient and inclusive.

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SOCIAL CAUSE

PROBLEM 2

Features:

- Users can filter travel options based on their specific accessibility needs, allowing them to easily find wheelchair-accessible hotels, sign language interpreters, visual aids, and other tailored services to help users plan their trips with confidence and ease.
- Integrated chatbot/AI assistant to offer real-time information about routes, accessibility, and emergency services during the trip, ensuring users have immediate support when needed
- A built-in emergency contact feature that allows users to quickly reach out to local support services for assistance, ensuring their safety and comfort while travelling.
- Support for multiple languages, including options for sign language and braille accessibility to accommodate a diverse range of users.

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SOCIAL CAUSE

PROBLEM 3

Domestic Violence Support System

Problem Statement:

Develop a discreet and user-friendly web/app to offer victims of domestic violence swift access to emergency support and resources. The platform should prioritise discretion, privacy, security, and ease of use; enabling victims to access immediate help and develop personalised safety plans.

Problem Description:

Domestic violence affects millions, often leaving victims feeling isolated and powerless due to physical, emotional, and psychological abuse. Many remain trapped by intimidation, manipulation, or financial dependence, unable to seek help due to fear, shame, or lack of knowledge about available resources. There is a need for a discreet platform that allows victims to access emergency assistance and support resources safely. The platform should help users create personalised safety plans while maintaining privacy and security, using discreet authorization to ensure others cannot detect the platform's true purpose on shared devices.

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SOCIAL CAUSE

PROBLEM 3

Features:

- The Emergency Assistance feature includes a panic button that discreetly alerts emergency contacts or authorities, one-click access to local hotlines and shelters, and an optional location tracking feature for sharing the user's location with contacts for swift assistance.
- The Secure Login System requires users to create a profile with multi-factor authentication (MFA) to prevent unauthorized access. It offers optional biometric verification for quick access and allows users to set personalized security questions for identity verification before accessing sensitive features.
- Personalised Safety Planning to design and store safety strategies that cater to a user's unique situation, such as pre-set alerts
- Safety Tools to store any information or files in a way that cannot be detected or discovered by anyone other than the user.
- The Discreet Operation feature lets users disguise the platform as a generic tool to avoid detection, including a one-click exit to close and redirect to a neutral site if monitored, and automatically deletes usage history to prevent tracking.

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SOCIAL CAUSE

PROBLEM 4

Educational Equity Platform

Problem Statement:

Design an online platform that connects students from underprivileged backgrounds with mentors and educational resources. The platform should offer virtual tutoring, facilitate access to scholarship opportunities, and provide a community forum for peer support and collaboration.

Problem Description:

Students from underprivileged backgrounds face barriers to quality education, including limited mentorship, inadequate resources, and a lack of information on financial aid. These challenges hinder their academic performance and future prospects. The proposed platform aims to bridge this gap by providing a centralised online space for these students to connect with mentors, access virtual tutoring, and find scholarship opportunities. With personalised mentorship, interactive resources, and a supportive community forum, the platform will offer tailored support and valuable connections, empowering students to excel academically and pursue their goals with confidence.

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SOCIAL CAUSE

PROBLEM 4

Features:

- The platform offers personalised academic support through virtual tutoring, connecting students with qualified tutors who can address their specific learning needs and help them improve their understanding of various subjects.
- It features a mentor matching system that pairs students with experienced mentors who provide tailored guidance, advice, and encouragement, fostering personal and academic growth.
- An extensive scholarship database is available, allowing students to easily access a wide range of financial aid opportunities, helping to alleviate the financial barriers to higher education.
- The application assistance feature guides students through the often complex college and scholarship application processes, ensuring they have the tools and resources needed to present their best selves.
- Community forums create a supportive online space where students can share their experiences, seek advice, collaborate on projects, and build valuable connections with peers facing similar challenges.