

Milestone 2



Mobile App UI/UX Design and AI Integration

Information Systems Capstone Project

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Introduction

In today's rapidly evolving digital landscape, integrating Artificial Intelligence (AI) into philanthropic activities presents unprecedented opportunities to enhance efficiency, personalise user experiences, and amplify the impact of charitable initiatives. The DTS team has conducted extensive research into artificial intelligence to develop a strategic plan specifically tailored to Giverly's unique needs. This plan identifies key opportunities and considerations, resulting in an AI-driven strategy designed to enhance user engagement, increase donations, ensure regulatory compliance, and improve operational efficiency.

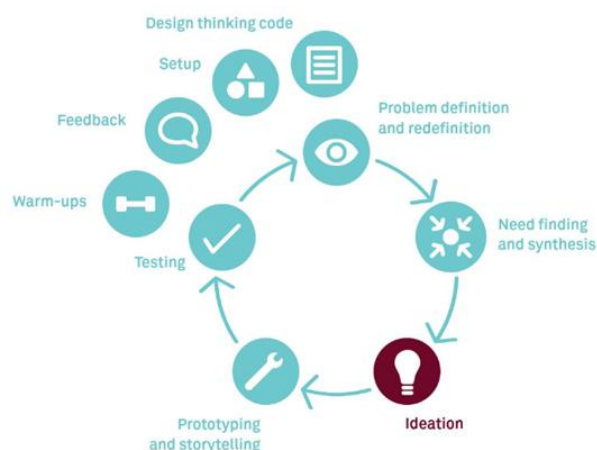
This client report outlines the ideation and prototyping processes, accessibility requirements, cybersecurity considerations, wireframes, and the detailed AI-Driven Philanthropic Strategy for Giverly. By implementing these recommendations, Giverly can optimise its digital platforms and significantly increase its impact in the philanthropic sector.

Ideate

In the design thinking methodology, ideation (Fig. 1) focuses on generating various ideas in response to a problem, fostering innovation and creativity within an organisation. This approach encourages divergent thinking, producing numerous creative ideas (Uebernickel et al., 2019, p.136). These ideas are then converged and refined into viable solutions through prototyping and iterative testing.

Fig. 1

Ideation Phase



Note. From Design thinking: the handbook (1 edition), by F. Uebernickel, L. Jiang, W. Brenner, B. Pukall, T. Naef & B. Schindlholzer, 2019, World Scientific.

The Power of Ideation

Ideation encourages creativity and innovation by allowing team members to think outside the box and explore unconventional solutions. It brings together diverse perspectives and promotes collaboration and a sense of ownership among team members, enhancing motivation and commitment. Leading technology companies also engage in ideation to drive innovation, fostering the creation of new designs and solutions. For instance, Apple's creation of the iPhone combined a mobile phone and touch-screen iPod and revolutionised the smartphone market. Netflix's shift from DVD rentals to online streaming is another example, representing disruptive innovation that created a new market and transformed how people consume media (IMD, 2024). These examples highlight how ideation and innovation can drive growth and success by improving existing products and creating new markets.

Funnel Brainstorming Ideation

Brainstorming is pivotal for generating creative and novel ideas by encouraging free-thinking and open-sharing without immediate judgment. In the Giverly project, brainstorming sessions were instrumental in leveraging the team's diverse backgrounds and expertise to produce innovative solutions. This collaborative process fostered open communication, emphasising the generation of numerous ideas (Lewrick et al., 2020, p. 151). Following brainstorming, the Funnel Approach was applied to systematically refine ideas, as shown in Figure 2. The funnel illustrates the progressive narrowing of AI-driven philanthropic concepts from an initial pool of 50 ideas to 25 and finally to the top 10 most impactful and feasible features. Additionally, the team ensured that these features align with the defined problem, objectives and Giverly's goals of increasing donations.

Fig. 2

Funnel Brainstorming Approach



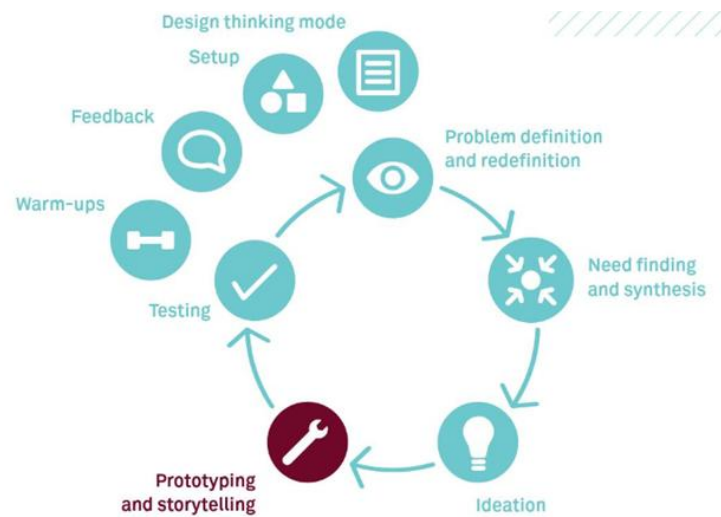
Note: Figure created in Cava

Prototype

Following the ideation phase, prototyping (Fig. 3) is crucial for Giverly's project development. Prototyping involves creating preliminary product versions to test and refine its features. This phase allows stakeholders to provide vital feedback, ensuring user requirements and expectations are aligned. It also helps identify and resolve design issues, refine features, and validate assumptions before full-scale implementation (Uebernickel et al., 2019, p.148). By testing AI-driven features, data flow, visual design, and user experience, the team can assess their effectiveness in enhancing donor engagement and optimising donation processes. This iterative approach minimises the risk of costly revisions, accelerates development, and ensures that AI solutions are user-friendly and aligned with Giverly's goals.

Fig. 3

Prototyping Phase



Note. From Design thinking: the handbook (1 edition), by F. Uebernickel, L. Jiang, W. Brenner, B. Pukall, T. Naef & B. Schindlholzer, 2019, World Scientific.

UX/UI Elements Consideration

To ensure a successful expansion into the UAE, it is essential to consider various UI/UX elements during the prototyping phase. Adapting the platform's design to reflect cultural preferences, language requirements, and accessibility standards will significantly enhance user experience. By prioritising intuitive navigation, clear visual elements, and usability, Giverly can foster greater engagement and satisfaction among UAE users, ultimately driving higher adoption rates (Canziba, 2018, p.10). Table 1 outlines the key elements to be considered.

Table 1

UX/UI Elements Consideration

Category	Element	Description	Reason
User Experience Elements	User Journey Mapping	Visualizes touchpoints and potential pain points to ensure a smooth, intuitive experience.	Helps identify and address user pain points, improving overall usability and satisfaction.
	Information and System Architecture	Organizes content clearly, allowing easy navigation and contributing to a frustration-free experience.	Ensures users can quickly find information and navigate the app efficiently, reducing frustration.
	Accessibility and Consistency	Ensures intuitive interfaces and consistent design, accommodating all users, including those with disabilities.	Promotes inclusivity and reduces the learning curve, making the app usable for a wider audience.
	User Flow and Task Completion	Streamlines user flows, minimizes steps, and provides clear error messages to enhance efficiency.	Improves task efficiency and reduces user errors, leading to a more effective and satisfying experience.
	Security and Transparency	Implements robust security measures and transparent data handling, building user trust.	Builds trust by ensuring users feel secure about their personal information and data handling practices.
	Performance Optimization	Ensures fast loading times and responsive interactions.	Enhances user satisfaction by reducing waiting times and ensuring a smooth experience.
User Interface Elements	Visual Design	Aligns UI with brand identity using consistent colors, fonts, and logos to engage users.	Reinforces brand identity and creates a visually appealing experience, enhancing user engagement.
	Layout and Structure	Utilizes a clean, logical layout and grid system for easy navigation and feature interaction.	Facilitates intuitive navigation and efficient interaction with features, improving user experience.
	Typography	Uses clear, readable fonts for headings and body text to ensure readability and cohesive design.	Enhances readability and ensures that text is easily understood, contributing to a better user experience.
	Color Scheme	Applies color strategically to improve readability and guide user behavior with adequate contrast.	Enhances visual hierarchy and user guidance, making the app more user-friendly and aesthetically pleasing.
	Buttons and Controls	Designs buttons and controls to be easily tappable or clickable, providing clear feedback on interactions.	Ensures ease of use and effective interaction by making controls responsive and feedback clear.
	Iconography	Utilizes clear and meaningful icons to aid navigation and understanding.	Supports quick recognition of actions and sections, enhancing usability and user experience.

Accessibility Requirements

Accessibility requirements in information systems are essential to ensure digital services are usable by everyone, including those with disabilities. The integration of accessibility should start at the beginning of the development lifecycle to prevent costly revisions later (Bi et al., 2022, p.20). Governed by laws and policies, these requirements promote inclusivity and equal access. For organisations like Giverly, adhering to these standards is a legal duty and a moral commitment that enhances user engagement and broadens the audience. Implementing accessible designs not only meets legal standards but also improves usability, thus avoiding penalties and boosting the organisation's reputation. To ensure Giverly meets the accessibility requirements in the UAE, it is important to adhere to several key regulations and guidelines.

1. Web Content Accessibility Guidelines (WCAG) 2.2

Developed by the World Wide Web Consortium (W3C), the Web Content Accessibility Guidelines (WCAG) 2.2 are international standards for making web content accessible to a broad spectrum of disabilities. These guidelines are built around four key principles to ensure digital content is perceivable, operable, understandable, and robust. This means users must be able to perceive the information, operate the interface, understand the content and the interface's operation, and the content must be robust enough to be interpreted reliably by various user agents, including assistive technologies (World Wide Web Consortium, 2023).

2. UAE National Digital Accessibility Policy

The UAE's National Digital Accessibility Policy emphasises the importance of digital inclusivity for all segments of society, including people of determination and the elderly. It mandates that digital products and services are accessible, leveraging modern technologies like AI to enhance service efficiency (United Arab Emirates Government, n.d.). For the Giverly project, this means ensuring the website and app are designed to be easily accessible to individuals with disabilities, incorporating features that support varied user needs to comply with these standards.

3. UAE Design System 2.0

The UAE Design System 2.0 mandates specific accessibility measures for Giverly's website and app. This includes using easily readable fonts, ensuring high contrast ratios for colour schemes, and setting a minimum icon size of 24px with accompanying screen reader text. All multimedia must have captions for the hearing impaired and alt text for images to assist the visually impaired. Keyboard navigability

should feature visible focus indicators, and the site must adhere to ARIA standards to enhance compatibility with assistive technologies, aligning with global accessibility practices to improve the experience for disabled users (UAE Design System, n.d.).

Specific accessibility requirements must be implemented to ensure that Giverly's digital platforms fully adhere to these comprehensive guidelines and standards. These requirements are detailed in Table 2 below.

Table 2

Giverly Accessibility Requirements

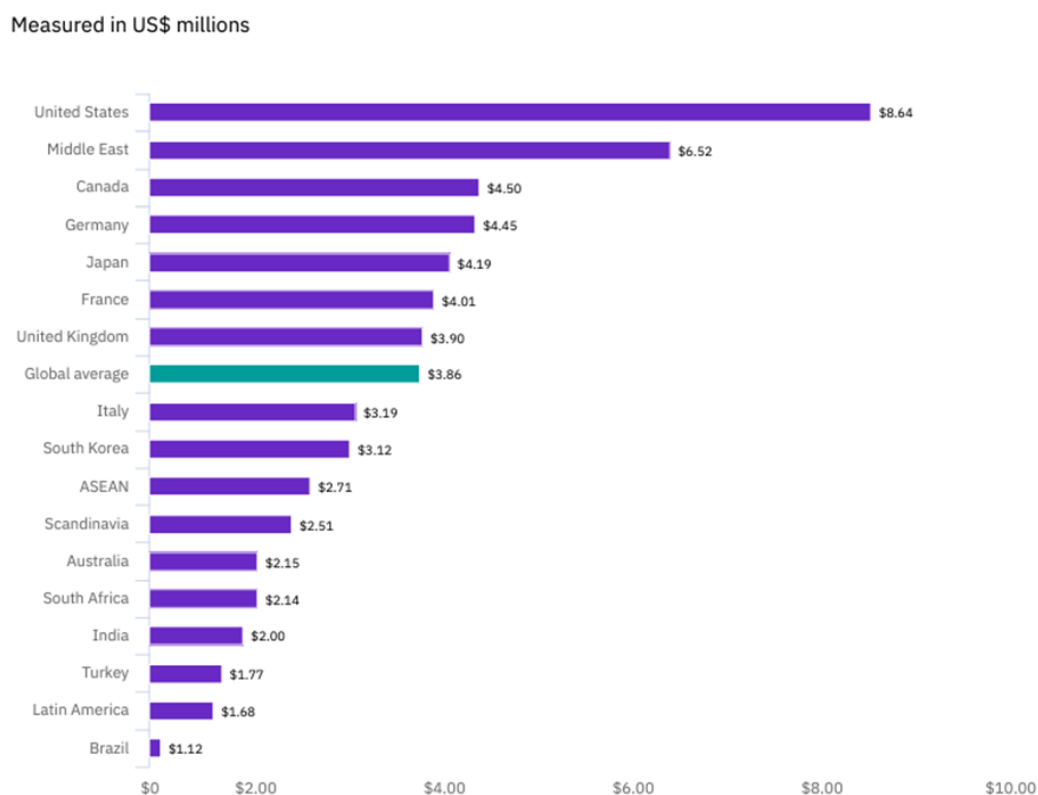
Guideline	Requirement	Description	Reason
Perceivable	Text Alternatives	Provide alternatives for non-text content.	Enhances accessibility for those needing alternative formats.
	Time-Based Media	Provide alternatives for time-based media.	Ensures media is accessible to all users.
	Adaptable Content	Ensure content can be presented in different ways.	Aids users with sensory disabilities.
	Distinguishable Content	Optimize content to be easily seen and heard.	Improves content visibility and audibility.
Operable	Keyboard Accessibility	Ensure all functionalities are accessible via a keyboard.	Supports users with mobility impairments.
	Enough Time	Provide sufficient time to read and use content.	Accommodates users with cognitive delays.
	Navigable	Provide ways to help users navigate, find content, and determine their location.	Enhances usability and orientation within the app.
	Seizures and Physical Reactions	Avoid design elements that could cause seizures.	Prevents physical reactions to flashing or blinking lights.
Understandable	Readable	Ensure text content is readable and understandable.	Assists users with cognitive limitations.
	Predictable	Make web pages operate in predictable ways.	Reduces confusion and enhances user predictability.
	Input Assistance	Help users avoid and correct mistakes.	Benefits users with cognitive, language, or learning disabilities.
Robust	Compatible	Ensure content compatibility with current and future technologies.	Guarantees accessibility across all platforms and devices.

Cybersecurity Considerations and Requirements

The frequency and sophistication of cybersecurity attacks are increasing rapidly in today's digital landscape. With the proliferation of connected devices and the expansion of digital services, organisations face more sophisticated threats. Cybersecurity is imperative for organisations to protect their data, systems, and networks from digital attacks that can lead to significant financial losses and damage to reputation. According to IBM's report, the average cost of a data breach in the Middle East region is \$6.52 million, with a global average of \$3.86 million, as illustrated in Figure 4, underscoring the financial impact (IBM, 2020, p.23).

Fig. 4

Average Cost of a Data Breach by Region

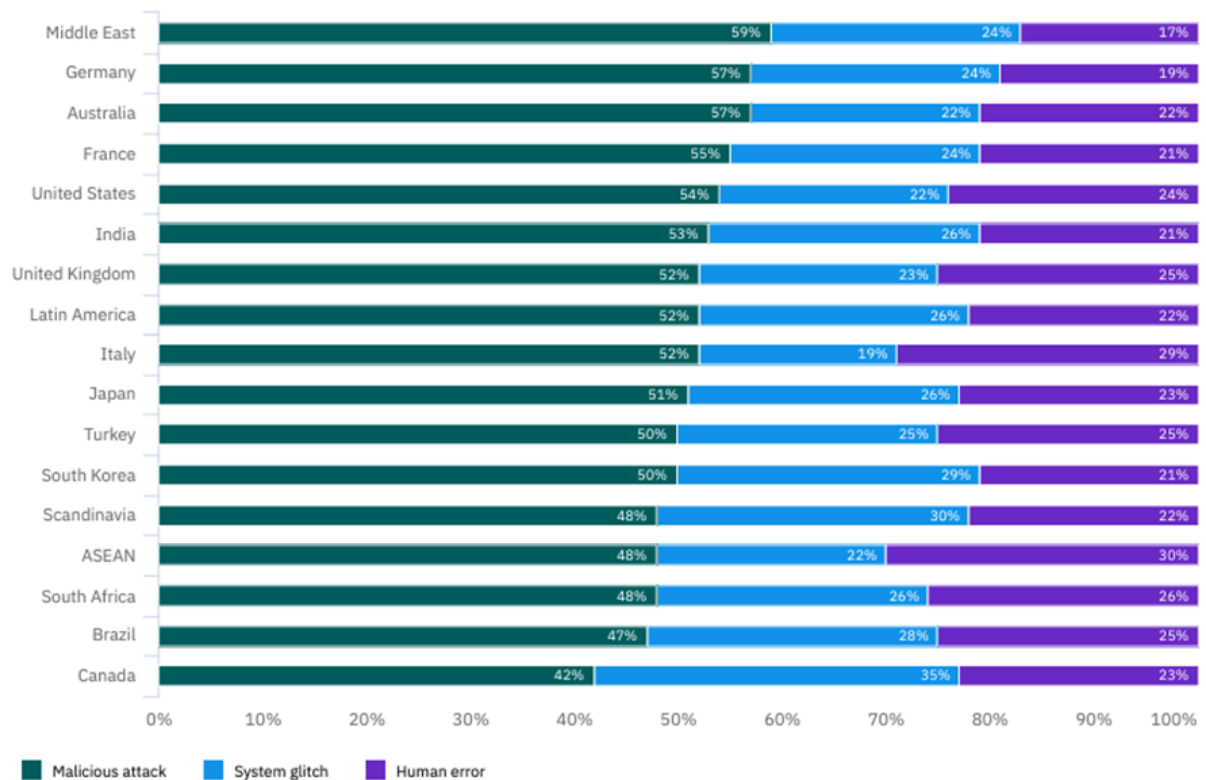


Note. From Cost of a Data Breach Report, by IBM, 2020, IBM Security.

Moreover, the report examines the primary root causes of data breaches, which include malicious attacks, system glitches, and human error. Figure 5 illustrates the regional breakdown of these causes, revealing that in the Middle East, malicious attacks are the most prevalent at 59%, followed by system glitches at 24% and human error at 17% (IBM, 2020, p.33).

Fig. 5

Data Breach Root Cause by Region



Note. From Cost of a Data Breach Report, by IBM, 2020, IBM Security.

For organisations, cybersecurity is not just about protecting information but also about ensuring operational continuity, maintaining customer trust, and complying with regulatory requirements. Therefore, implementing robust cybersecurity protocols is crucial for Giverly's successful expansion into the UAE.

To comply with UAE data protection laws and the Telecommunications Regulatory Authority's Standard Information Security Policy, several cybersecurity considerations must be implemented for Giverly's digital platforms. Firstly, personal data must be encrypted in transit and at rest to ensure confidentiality. Robust password management practices, including multi-factor authentication, are crucial for protecting user accounts. Explicit user consent must be obtained before processing their data. Additionally, users should be able to correct inaccurate data and restrict or stop processing their personal data. Moreover, compliance with regulations for cross-border data transfer is necessary (United Arab Emirates Government, n.d.). Moreover, regular software updates and patch management are necessary to keep the system secure from vulnerabilities. Establishing regular data backups and restoration processes will ensure data integrity and business continuity. Enforcing strict

access control measures is vital to limit data access to authorised users only (Telecommunications Regulatory Authority, n.d.).

Furthermore, international standards should also be considered, such as the ISO/IEC 27000 suite and the NIST Cybersecurity Framework. These frameworks provide robust guidelines for managing information security risks and ensuring data protection. Implementing ISO/IEC 27001 helps establish an information security management system, ensuring confidentiality, integrity, and availability of information. The NIST Cybersecurity Framework offers a structured approach to identifying, protecting, detecting, responding to, and recovering from cyber threats, ensuring operational security and resilience. Compliance with these standards enhances Giverly's credibility, aligns with UAE regulations, and reduces legal risks (Stallings, 2018, p.40).

Having considered all these factors, it is essential to implement robust cybersecurity measures to safeguard the security and integrity of Giverly's digital platforms. Table 3 below outlines these critical cybersecurity requirements, highlighting the strategies necessary to protect data and infrastructure effectively.

Table 3

Cybersecurity Requirements

Requirement	Description	Reason
Data Protection Compliance	Adheres to UAE's strict data protection laws to safeguard donor information.	Protects Giverly's donor privacy and ensures compliance with UAE's legal standards.
Robust Encryption	Employs strong encryption for data at rest and in transit.	Secures Giverly's donor data from unauthorized access, enhancing trust and security.
Regular Security Audits	Conducts systematic security assessments.	Helps Giverly identify and mitigate risks, ensuring the platform's integrity and donor trust.
Fraud Detection Systems	Integrates advanced AI-driven systems for detecting and preventing fraud.	Protects Giverly's financial assets and reputation by minimizing the risk of fraudulent activities.
Secure Payment Gateways	Uses only secure, verified payment channels for transactions.	Ensures the security of Giverly's financial transactions, maintaining donor confidence.
User Authentication and Access Control	Implements stringent processes to control access to sensitive data.	Safeguards Giverly's sensitive donor information, preventing data breaches and unauthorized access.
Data Backup and Archiving	Regularly backs up and securely archives data.	Guarantees Giverly's data resilience, ensuring donor information is protected and retrievable.
Secure Data Disposal	Establishes protocols for the secure disposal of data.	Ensures Giverly complies with data protection regulations and prevents data from being accessed post-disposal.
Physical Security at Data Locations	Enhances security at locations housing critical data infrastructure.	Protects Giverly's physical data assets from unauthorized access or damage, enhancing overall security.

Redundancy in Utilities	Ensures continuity of services with redundant power and internet services.	Maintains Giverly's operational continuity during outages, ensuring a reliable donor experience.
Security Orchestration, Automation, and Response (SOAR)	Implements SOAR to improve detection and response times, and reduce the average cost and time to identify a breach.	Helps Giverly accelerate incident response, automate security processes, and integrate with existing security tools, thus reducing potential financial and reputational damage.
Zero Trust Security Model	Adopts a zero trust strategy to prevent unauthorized access, making data and resources accessible only on a limited basis and in the right context.	Protects Giverly's sensitive data in remote and hybrid multicloud environments, mitigating risks associated with lost or stolen credentials and cloud misconfigurations.
Incident Response Planning	Forms and regularly tests incident response (IR) teams to develop and test IR plans.	Increases Giverly's cyber resilience and reduces the average total cost of a data breach by being prepared to respond quickly and effectively to cyber incidents.
Endpoint and Remote Employee Protection	Uses tools like Unified Endpoint Management (UEM) and Identity and Access Management (IAM) to monitor and secure endpoints and remote	Provides Giverly's security teams with deeper visibility into suspicious activity, speeding investigation and response times to isolate and contain damage, especially in remote work scenarios.
Simplifying IT and Security Environments	Minimizes complexity in IT and security environments to reduce costs associated with data breaches.	Helps Giverly streamline security operations, reducing vulnerabilities and improving the efficiency of incident detection and response.
Cloud Data Protection	Uses policy and technology to protect sensitive data in cloud environments, including data classification, encryption, and regular vulnerability scanning.	Protects Giverly's cloud-hosted data from breaches by reducing the volume of sensitive information and securing it through advanced protection techniques.
Training and Awareness Programs	Provides ongoing cybersecurity training and awareness programs for users and employees.	Educates Giverly's staff on best practices, reducing the risk of human error and enhancing the overall security posture.

These steps will build a robust cybersecurity framework that supports Giverly's mission while protecting against evolving cyber threats, thereby maintaining trust and reliability among users and stakeholders.

Wireframes and Interface Designs

Wireframes and interface designs play a pivotal role in the Giverly project as they provide a visual blueprint of the app's structure and functionality. They ensure a user-friendly and intuitive experience, key to engaging users and encouraging donations. Wireframes help identify and address potential issues early by outlining the layout and interaction flow, improving efficiency and reducing costs. They also facilitate clear communication among stakeholders, ensuring everyone understands the project goals and user experience expectations (Klimczak, 2013, p.92). The figures below offer a comprehensive overview of the user journey, illustrating the app's layout and interface design.

The welcome page (Fig. 6) serves as the initial interface for users. It features a clean design and an impactful message. It highlights the app's mission, setting the tone for a positive and engaging user experience.

Fig. 6

Welcome Page

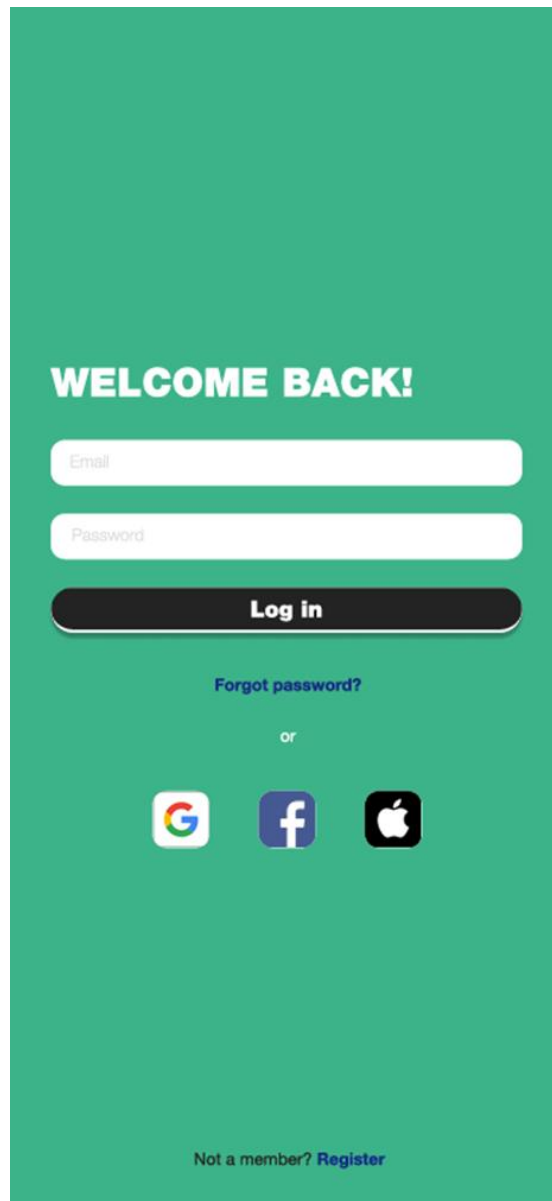


Note: Created using Figma

The login page (Fig. 7) allows users to log in using their email and password or register for a new account. Password recovery and social media login options are also available, ensuring a smooth onboarding process.

Fig. 7

Login Page

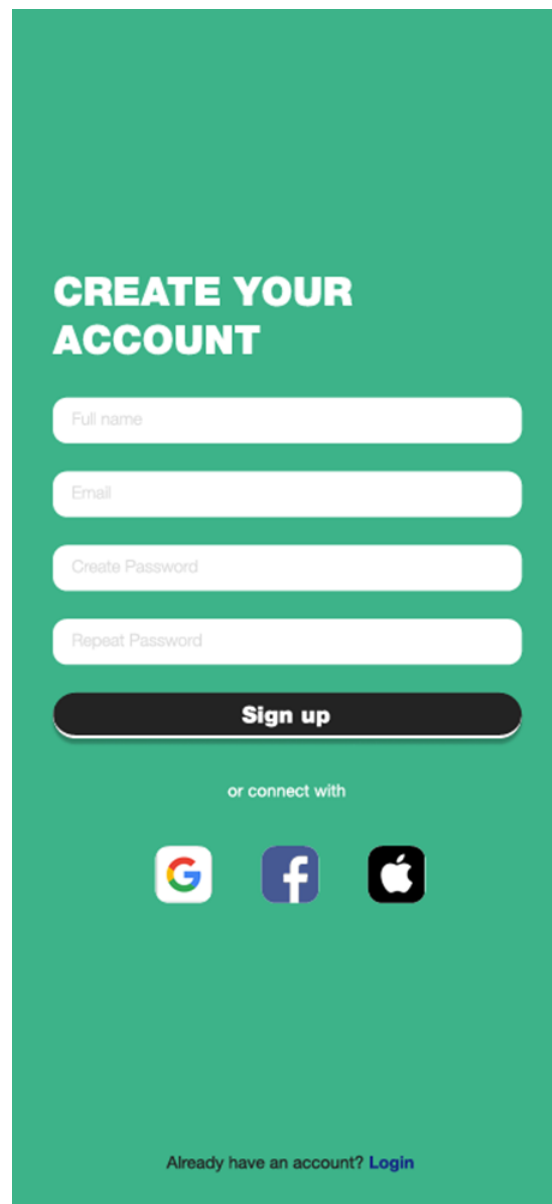


Note: Created using Figma

New users can create an account by providing their full name and email and creating a password. The registration page (Fig. 8) emphasises ease of registration with a clear form layout and options for social media sign-up.

Fig. 8

Registration Page



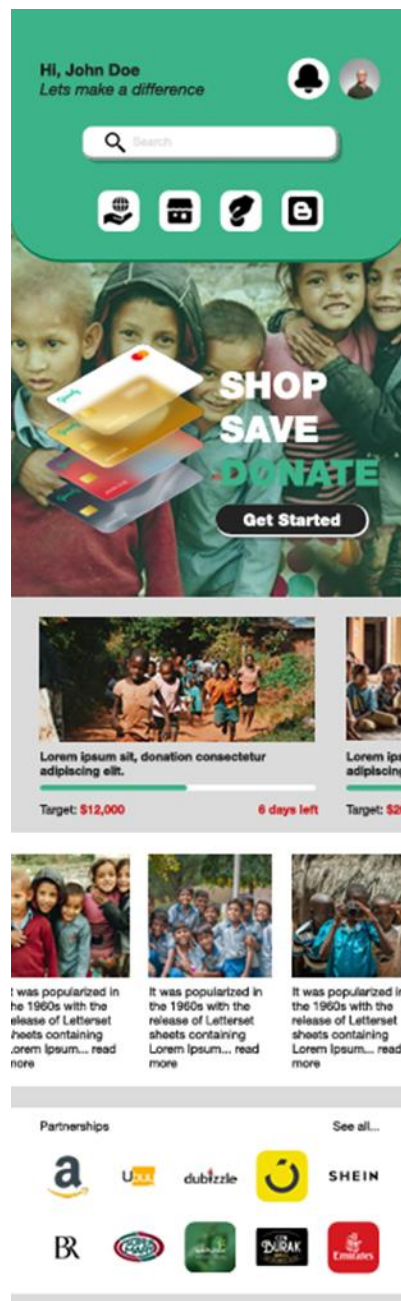
The image shows a mobile app registration screen with a solid green background. At the top, the text "CREATE YOUR ACCOUNT" is displayed in bold white capital letters. Below this, there are four white rounded rectangular input fields stacked vertically, each with a light gray placeholder text: "Full name", "Email", "Create Password", and "Repeat Password". Underneath the input fields is a dark gray rounded rectangular button with the text "Sign up" in white. Below the button, the text "or connect with" is centered in a small white font. Underneath this text are three social media icons: Google (G), Facebook (f), and Apple (Apple logo), each in its respective color and rounded square. At the bottom of the screen, the text "Already have an account? Login" is displayed in a small white font, with "Login" in a slightly larger, bold white font.

Note: Created using Figma

The main dashboard (Fig. 9) presents ongoing campaigns, partnerships, and a personalised greeting for the user. Key metrics like donation targets and deadlines are prominently displayed, encouraging user participation.

Fig. 9

Home Page

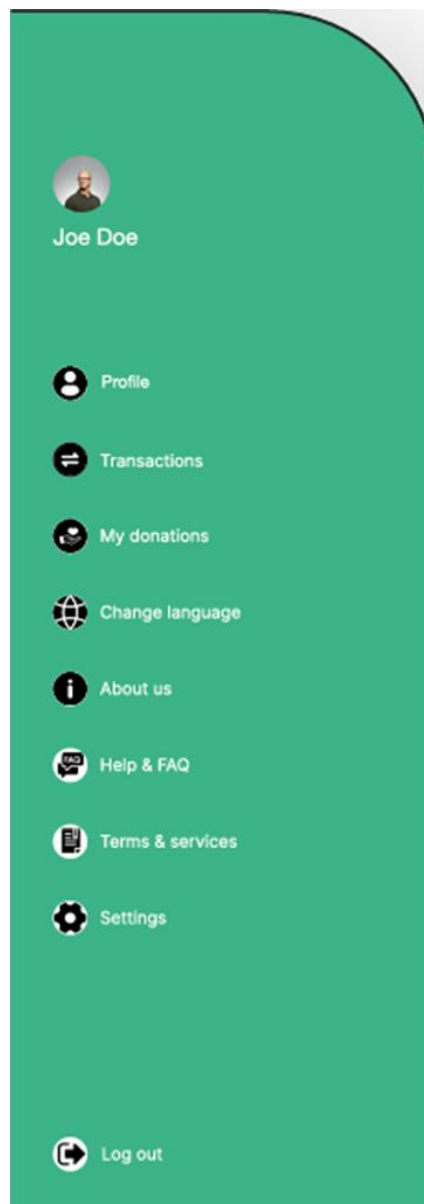


Note: Created using Figma

Users can manage their profile details, view donation history and transaction records, and access settings. The user account page (Fig. 10) also includes options for changing language preferences and accessing help and FAQ sections.

Fig. 10

User Account Management

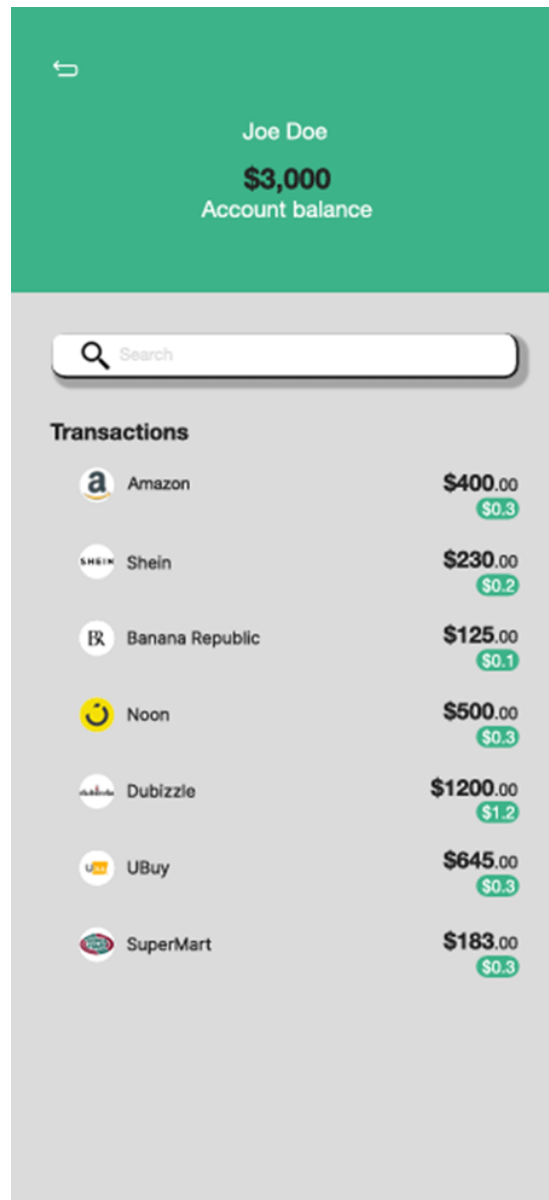


Note: Created using Figma

The transaction page (Fig. 11) provides users with a detailed overview of their transaction and donation history, including dates, amounts, and recipients. It features a search bar and a clear, intuitive layout that ensures users can easily track their contributions and monitor the impact of their donations.

Fig. 11

Transaction Page

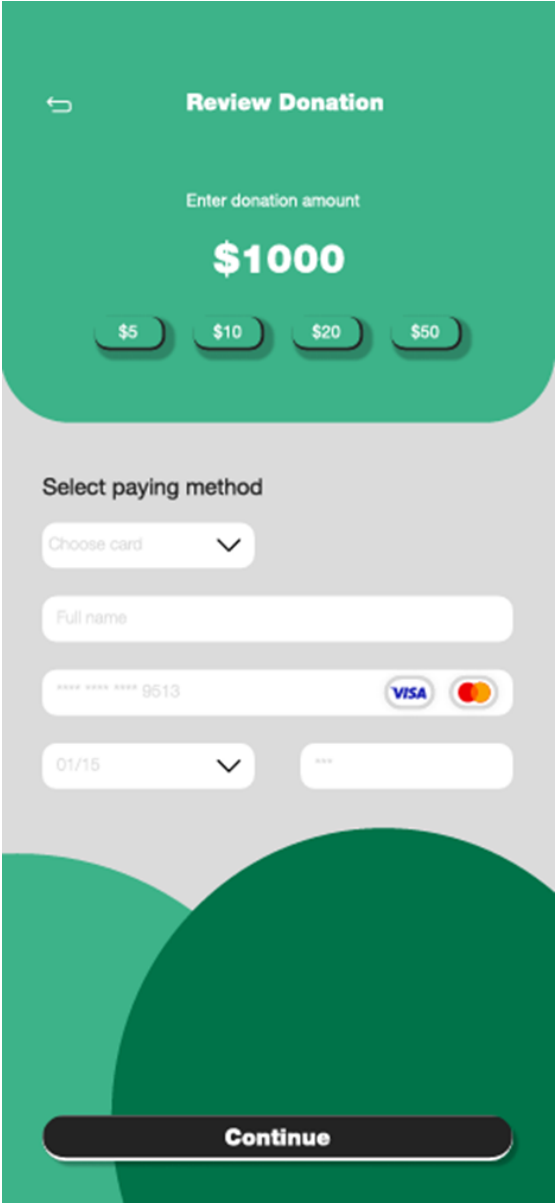


Note: Created using Figma

The donation page (Fig. 12) guides users through the donation process, allowing them to select a payment method, enter donation amounts, and review their donation before proceeding. The layout ensures clarity and ease of use.

Fig. 12

Donation Page

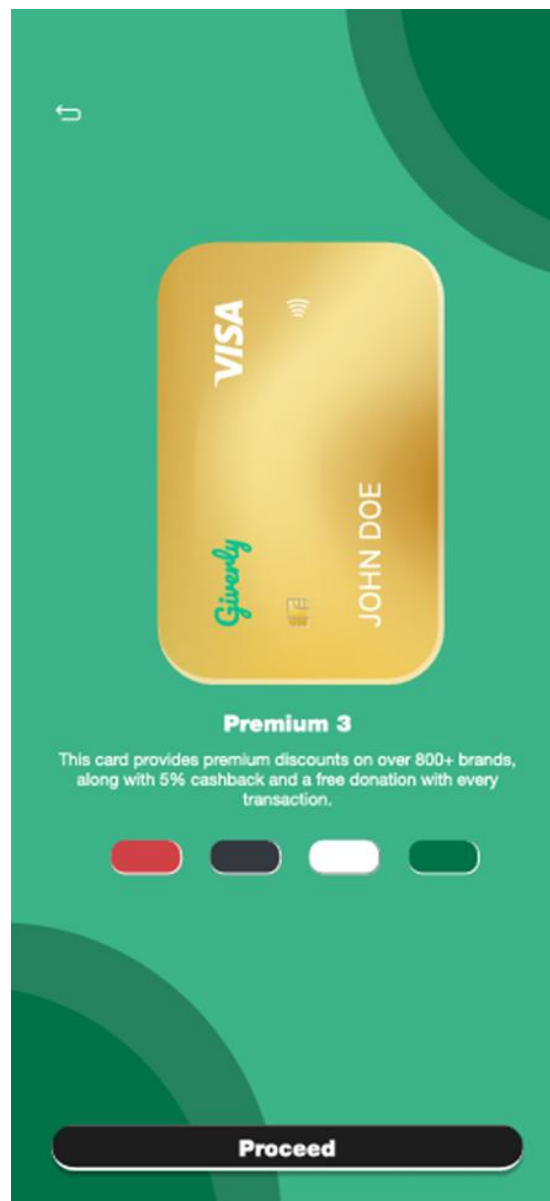


Note: Created using Figma

Users are introduced to premium membership benefits, including discounts, cashback, and additional donation perks. Detailed descriptions and enticing offers aim to convert regular users into premium members (Fig. 13).

Fig. 13

Premium Membership Benefits Page



Note: Created using Figma

The cause selection page (Fig. 14) allows users to browse and choose from various charitable initiatives. Featuring categorised listings and detailed descriptions, it ensures users can easily find and select causes that align with their interests and values, enhancing their engagement and connection to the platform.

Fig. 14

Cause Selection Page

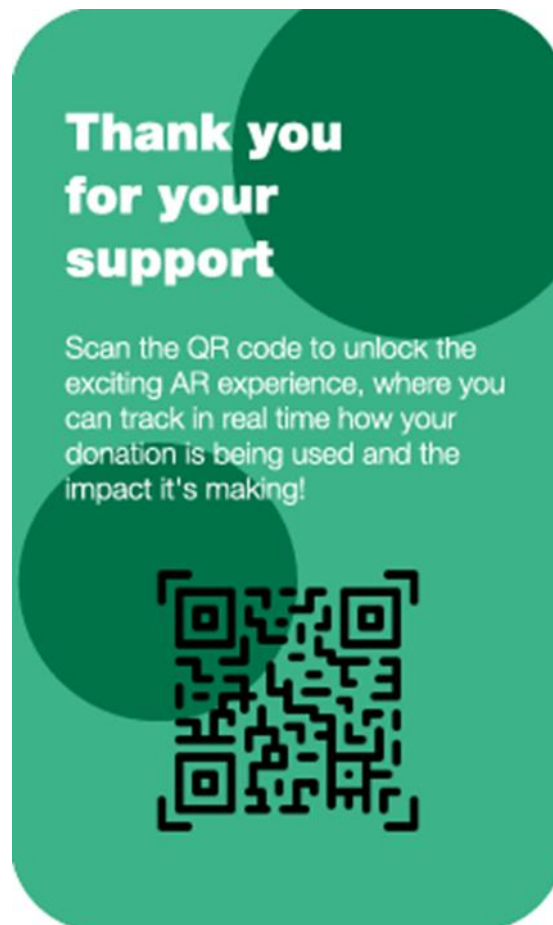


Note: Created using Figma

After donating, users receive a thank-you message (Fig. 15), and they can scan a QR code to unlock an AR experience that tracks their donation impact in real-time. This interactive feature enhances engagement and provides a novel way for users to see the difference their donations make.

Fig. 15

Thank You Page / Augmented Reality Experience



Note: Created using Figma

AI-Driven Philanthropic Strategy

Artificial intelligence is revolutionising the philanthropic landscape by enhancing efficiency, personalising donor experiences, and increasing the impact of charitable activities. With recent trends and advancements in AI, it is highly advantageous for Giverly to leverage these technologies. Through the integration of AI, Giverly can create a more effective, impactful, and user-friendly platform, aligning with its objective, modern technological advancements, and user expectations.

The DTS team has conducted comprehensive research into artificial intelligence to develop a strategic plan integrating AI into Giverly's philanthropic activities. This thorough exploration allowed the team to identify key opportunities and challenges, ultimately resulting in an AI-driven strategy to enhance user engagement, increase donations, ensure regulatory compliance, and improve operational efficiency. Table 4 provides a comprehensive overview of the detailed objectives and goals of the AI strategy.

Objectives and Goals

Table 4

Giverly's Objectives and Goals

Objective	Description	Goal	Reason
Increase Donations with the Use of AI	Leverage new technological advancements and AI to identify potential high-value donors and optimize fundraising campaigns.	Boost overall donation rates by targeting donors more effectively and tailoring campaigns to their preferences.	Expanding Giverly's impact requires higher donation rates, which AI can achieve by personalizing campaigns and engaging donors more effectively. This supports charitable causes significantly and ensures the platform's sustainability and growth.
Adhere to Regulatory Compliance in the UAE	Ensure that all operations align with UAE fintech and charity regulations and secure necessary licenses.	Maintain legal compliance to avoid legal penalties, enhance credibility with users and regulators, and facilitate smooth operations within the UAE market.	Compliance with UAE regulations is critical to avoid legal repercussions and fines. It also enhances credibility and trust with users and regulators, enabling smooth and uninterrupted operations.
Culturally Adapted and Enhanced User Experience	Utilize AI for localization to provide a personalized and culturally relevant experience to users.	Enhance user engagement by catering to the specific cultural and language needs of users, making them feel valued and understood.	Providing a culturally adapted user experience increases satisfaction and retention. When users feel that their specific needs and preferences are acknowledged, they are more likely to engage with the app frequently and make more donations.
Robust Security and Transparency	Implement AI-driven security measures, including fraud detection, and provide transparent impact tracking and reports.	Build trust and ensure data protection by safeguarding user data and preventing fraud.	Ensuring robust security measures and transparent operations is fundamental in building donor trust. When donors are confident that their data is protected and can see the real impact of their contributions, they are more likely to continue supporting the platform. This transparency and security protect the organization's reputation and encourage ongoing support.

Through the ideation phase of design thinking, the DTS team has developed innovative ideas for integrating AI into the Giverly project. The following features and functions, powered by advanced AI tools and techniques, will be instrumental in achieving the project objectives and goals.

AI-Powered Micro Donation

AI-Powered Micro Donation leverages artificial intelligence algorithms to analyse user behaviour and preferences, suggesting small, automated contributions during routine interactions. This feature allows users to effortlessly contribute micro-donations, such as rounding up daily purchases to the nearest dollar and donating the difference or breaking down a larger donation into manageable monthly amounts.

Example Scenario

A donor sets up their Giverly app to round up their daily coffee purchase to the nearest dollar, automatically donating the extra cents to a children's education fund. For instance, a regular coffee drinker, John uses the Giverly app to round up his daily coffee purchases. Each coffee costs him \$3.50, and the app rounds it up to \$4.00, donating \$0.50 each time. Over a month, these small contributions accumulate into a significant donation of around \$15. Additionally, if John plans to make a one-time \$100AUD donation, the AI suggests spreading the donation as \$10AUD per month for one year, totalling \$120AUD donated over the year.

AI Tools

Programming languages such as Python and R can be used for data analysis and algorithm development, providing the computational power needed to analyse user behaviour and preferences. Machine learning libraries such as Scikit-learn and TensorFlow can also be utilised to build and train AI models that will predict and suggest optimal micro-donations based on user interactions (Kumar, 2018, p.216). Additionally, Payment integration APIs, like Stripe or PayPal, handle the rounding up and processing of micro-donations seamlessly, ensuring secure and efficient transactions. Furthermore, Pathmonk's AI-powered platform can enhance the feature by predicting donor behaviours in real time and suggesting optimal times and amounts for micro-donation (Dowling, 2023).

Implementation Plan

The implementation plan for the AI-Powered Micro Donation feature begins with data collection, gathering user behaviour data such as spending patterns and donation history, along with preferences and interaction data from the app. This data is then analysed using machine learning algorithms to identify patterns and trends in user behaviour, optimising the timing and amount of suggested donations. Based on this analysis, predictive models are developed and validated to accurately suggest micro-donations. These AI models are integrated into the Giverly app, with payment integration APIs handling the rounding up of transactions and processing donations. The feature is then launched in the app, with continuous monitoring and feedback collection to adjust the models and improve accuracy and user satisfaction.

Expected Outcome and Impact

The AI-Powered Micro Donation feature is expected to significantly enhance Giverly's fundraising efforts by making donations seamless and intuitive. By encouraging frequent micro-donations, AI-driven suggestions lower the barriers to giving, increasing overall donation amounts. This feature fosters continuous donor engagement and satisfaction as users see their small contributions accumulate into substantial impacts (Hwang et al., 2021, p.9). Additionally, it builds stronger donor relationships by enhancing loyalty and retention. This feature aligns perfectly with Giverly's goals of increasing donations, fostering long-term donor relationships, and ultimately contributing to the platform's growth and sustainability.

Virtual Reality Empathy Simulator

The Virtual Reality Empathy Simulator immerses users in the environments and lives of those they can help, using VR headsets to create simulated real-life scenarios. This fosters a deeper understanding and emotional connection to the cause, inspiring empathy and a stronger desire to contribute.

Example Scenario

A potential donor uses a VR headset to experience a day in the life of a refugee, navigating a crowded camp, struggling to access basic necessities, and facing daily hardships. This powerful simulation evokes a deep emotional response, prompting the donor to support relief efforts.

AI Tools

To develop the Virtual Reality Empathy Simulator for Giverly, advanced AI tools such as Unity for creating robust VR content, Blender for high-quality 3D models and animations, and Unreal Engine for detailed interactive VR simulations will be employed. Additionally, Amazon Sumerian will support creating and deploying interactive VR environments (Analytics Insight, 2023). These tools will ensure an immersive, interactive VR experience that fosters empathy and increases donations.

Implementation Plan

The implementation plan involves several steps. First, detailed information and visuals about the environments and lives of the beneficiaries will be gathered. Then, develop 3D models and interactive environments using Blender and integrate them into Unity or Unreal Engine. Next, Unity or Unreal Engine can be used to create immersive VR experiences, incorporating real-life scenarios that potential donors can explore. Embed these VR experiences into the Giverly app, ensuring they are accessible through VR headsets. Conduct user testing to gather feedback and refine the VR experiences, ensuring they are compelling and effective. Finally, the VR Empathy Simulator will be deployed within the app, and user feedback will be continuously monitored to make improvements.

Expected Outcome and Impact

This feature is expected to significantly enhance donor engagement and satisfaction by providing a vivid, immersive understanding of the impact of their contributions. This feature creates a powerful emotional connection by allowing users to experience the challenges and lives of those they are helping, fostering empathy and a sense of urgency. This deep emotional involvement motivates users to donate more generously and frequently, as they can directly visualise the difference their contributions make, leading to increased overall donations and a more fulfilling user experience (Pantano et al., 2017, p.29).

Real-Time Donation Tracking & Impact Report

Real-Time Donation Tracking & Impact Reports use advanced AI to compile and analyse data on fund allocation and the outcomes achieved. The system generates comprehensive, real-time reports detailing the usage and impacts of donations, ensuring transparency and accountability. Additionally, whenever a user donates, they receive a real-time impact notification, such as, "Your donation has helped feed ten people. Thank you for your help."

Example Scenario

A user makes a donation and receives an immediate notification after stating, "Your contribution has provided 20 children with school supplies for a month." The user may also access a monthly impact report detailing their donation details and how the funds were used, including the number of children helped and stories from the community.

AI Tools

AI tools such as ImpactMapper and Funraise Fundraising Intelligence can be utilised for this feature. ImpactMapper specialises in analysing qualitative and quantitative data, providing detailed visual reports on the impact of donations. It helps track how funds are used and the outcomes achieved, generating comprehensive, visually appealing impact reports (ImpactMapper, n.d.). Funraise Fundraising Intelligence leverages AI to offer real-time insights into fundraising performance, donor behaviour, and engagement metrics. It can automatically generate reports highlighting key metrics and trends, ensuring transparency and accountability (Funraise, n.d.). These tools collectively provide robust data-driven insights, helping to track donations effectively and communicate their impact to donors in real time.

Implementation Plan

First, comprehensive data on donations, including fund allocation, usage, and outcomes, will be collected. Machine learning algorithms will then analyse this data to identify patterns and trends in fund utilisation. Predictive models will be developed and validated to track and report on donations' impacts accurately. Integrate these AI models into the Giverly app, utilising tools like ImpactMapper and Funraise Fundraising Intelligence for advanced visualisation. Launch the feature within the app, ensuring continuous monitoring and feedback for improvements.

Expected Outcome and Impact

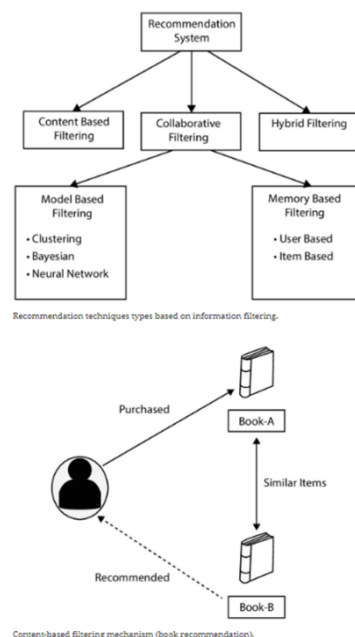
This feature is expected to significantly enhance donor engagement and satisfaction by providing real-time notifications and detailed, transparent reports on the impact of their contributions. By ensuring donors can see the immediate and long-term effects of their donations, this feature builds trust and encourages continued and increased support. The real-time feedback fosters a stronger connection between donors and the causes they support, leading to higher donor retention and increased overall donations (Ortega-Rodríguez et al., 2020).

Machine Learning for Personalized Recommendations

Machine learning for personalised recommendations analyses user data to suggest charitable causes, similar purchases, or discounted items that align with user interests and past behaviours. AI models detect patterns in user interactions, preferences, and donation history, providing tailored suggestions that enhance user engagement and satisfaction. Recommendation engines use collaborative filtering, content-based filtering, and matrix factorisation to generate personalised suggestions. Figure 16 illustrates various techniques used in recommendation systems (Mohanty et al., 2020, Part 2).

Fig. 16

Recommendation System Techniques



Note. From Recommender System with Machine Learning and Artificial Intelligence, by S. Mohanty, J. Chatterjee, S. Jain, A. Elngar, & P. Gupta, 2020, Wiley-Scrivener.

Example Scenario

A donor who frequently supports environmental initiatives receives recommendations for similar causes and eco-friendly products on sale. The AI might suggest charities focused on wildlife conservation or climate change and offer discounts on related items like reusable water bottles or solar-powered gadgets.

AI Tools

Python and R for data analysis and algorithm development. AWS SageMaker and IBM WatsonX can be used to develop recommendation engines that analyse user interactions, preferences, and donation history to suggest relevant charitable causes and other personalised content. These tools can handle model training and deployment and can be used for advanced data processing and AI-driven insights (Dowling, 2023).

Implementation Plan

The implementation plan involves collecting data on user interactions, preferences, donation history, and purchase behaviour. This data is cleaned and pre-processed for analysis. Machine learning algorithms train models on this data to generate personalised recommendations. These models are integrated into the Giverly app and connected to e-commerce APIs to recommend similar purchases and discounts. Continuous monitoring and feedback loops ensure the models remain accurate and effective.

Expected Outcome and Impact

This feature is expected to increase user engagement and satisfaction by offering personalised cause recommendations, similar purchases, and discounted items, leading to higher donation rates and improved user retention. Personalising recommendations makes users feel valued and understood, aligning with Giverly's goals of enhancing user experience, increasing donations, and fostering long-term user loyalty. This approach contributes to the platform's growth and sustainability by ensuring donors feel connected to the causes and products they support, driving continuous and increased contributions.

AI-Enhanced Security and Transparency

How It Works

AI-enhanced security and Fraud Detection employs advanced AI and machine learning technologies to monitor and analyse user behaviour and network activities in real-time, identifying and mitigating security threats and fraudulent activities (Edwards, 2024, p.551). This feature includes anomaly detection, behavioural biometrics, predictive threat modelling, and suggesting mitigation actions to users.

Example Scenario

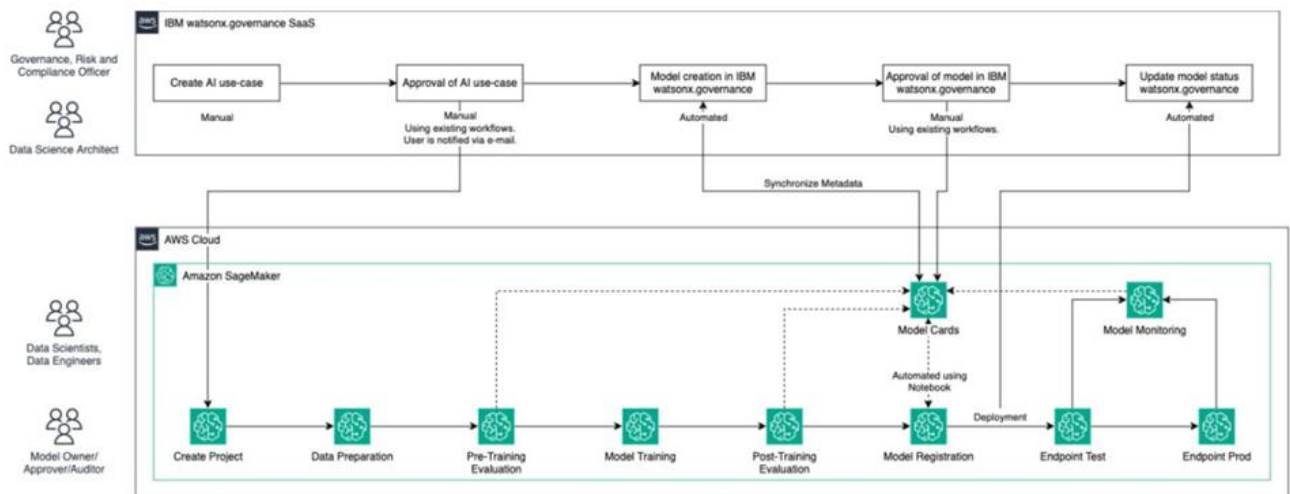
A donor receives an alert from Giverly about a suspicious login attempt from an unfamiliar location, prompting them to confirm their identity. The AI system analyses the typing speed and mouse movements, determines if it is an unauthorised access attempt, blocks it, and suggests that the user reset their password.

AI Tools

AI tools like TensorFlow and Keras are essential for developing sophisticated threat detection models using deep learning and neural networks. Python and Scikit-learn facilitate behavioural analytics by processing data and identifying patterns of fraudulent activity. AWS SageMaker and IBM Watson support predictive threat modelling, enabling the anticipation of future threats based on historical data (Fronza et al., 2024). Splunk can automate incident responses, providing immediate actions against detected threats (Kidd, 2023). Figure 17 demonstrates the integration of IBM Watson and AWS SageMaker.

Fig. 17

IBM Watson and AWS SageMaker Integration



Note. From Optimize AI governance with Amazon SageMaker and IBM watsonx.governance, by Fronza E. M., Leblanc N., Vittal R., & Raghavan S., 2022, Amazon Web Services.

Implementation Plan

The implementation plan for the AI-Enhanced Security and Fraud Detection feature begins with data collection, gathering comprehensive data on user behaviour and network activities. This data is analysed using machine learning algorithms to identify patterns and trends in user behaviour and network activities. Predictive models for anomaly detection, behavioural biometrics, and predictive threat modelling are developed and validated. These AI models are integrated into the Giverly app, ensuring seamless functionality with existing security infrastructure. Automated incident response protocols are established to handle detected threats promptly. The feature is then deployed within the app, followed by continuous monitoring, feedback collection, and model adjustments to improve accuracy and user satisfaction.

Expected Outcome and Impact

This feature is expected to significantly enhance the security and trustworthiness of the Giverly platform by proactively identifying and mitigating security threats and fraudulent activities. Real-time alerts and detailed security reports build donor confidence and trust, potentially leading to increased donor retention and higher donation amounts. Additionally, by analysing unique user behaviours and suggesting mitigation actions, the system ensures a more secure and user-friendly experience.

Ethical and Responsible AI

AI governance is essential to ensure that AI tools and systems remain safe and ethical. Robust AI policies, regulations, and data governance are imperative for mitigating the risks associated with bias, discrimination, individual harm, privacy infringement, and misuse (Mucci & Stryker, 2023). Giverly must have sound AI governance and follow the principles of responsible AI.

The following principles must be adhered to (Taulli, 2021, p. 172):

- **Fairness:** Ensuring fair treatment of all individuals without bias.
- **Reliability and safety:** Emphasising the critical nature of safety and the necessity for AI-generated information to be accurate and reliable.
- **Privacy and security:** Handling all information under stringent guidelines to uphold privacy and security at every level.
- **Inclusiveness:** Designing systems that are accessible and empowering for all individuals.
- **Transparency:** Emphasising the importance of comprehensible results and decision-making processes within AI systems.
- **Accountability:** Ensuring that individuals are responsible for AI tools and systems.

Key Dates & Milestones

Fig. 18 shows the timeline allocated to each task, important milestones, and the person responsible for their successful completion.

Fig. 18

Gantt Chart

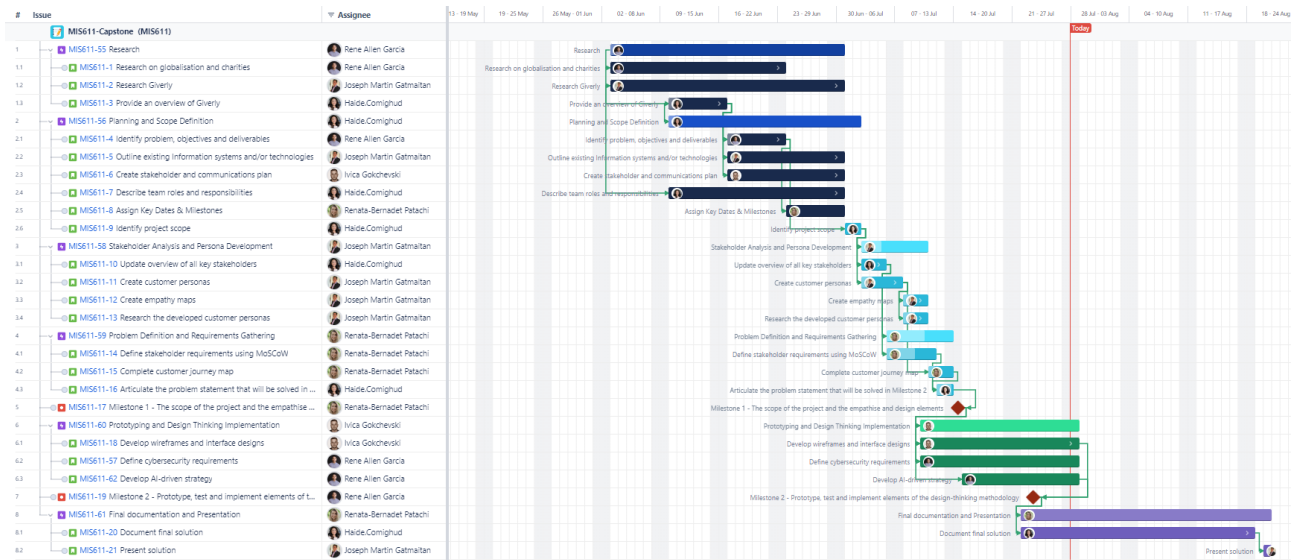


Fig. 19 offers a different perspective on the tasks, start and end dates and status of each task.

Fig. 19

Project tasks

#	Issue	Assignee	Start Date	End Date	Status
	MIS611-Capstone (MIS611)				
1	MIS611-55 Research	Rene Allen Garcia	03/Jun/24	30/Jun/24	DONE
1.1	MIS611-1 Research on globalisation and charities	Rene Allen Garcia	03/Jun/24	23/Jun/24	DONE
1.2	MIS611-2 Research Giverty	Joseph Martin Gatmaitan	03/Jun/24	30/Jun/24	DONE
1.3	MIS611-3 Provide an overview of Giverty	Haide.Comighud	10/Jun/24	16/Jun/24	DONE
2	MIS611-56 Planning and Scope Definition	Haide.Comighud	10/Jun/24	02/Jul/24	DONE
2.1	MIS611-4 Identify problem, objectives and deliverables	Rene Allen Garcia	17/Jun/24	23/Jun/24	DONE
2.2	MIS611-5 Outline existing Information systems and/or technologies	Joseph Martin Gatmaitan	17/Jun/24	30/Jun/24	DONE
2.3	MIS611-6 Create stakeholder and communications plan	Ivica Gokchevski	17/Jun/24	30/Jun/24	DONE
2.4	MIS611-7 Describe team roles and responsibilities	Haide.Comighud	10/Jun/24	30/Jun/24	DONE
2.5	MIS611-8 Assign Key Dates & Milestones	Renata-Bernadet Patachi	24/Jun/24	30/Jun/24	DONE
2.6	MIS611-9 Identify project scope	Haide.Comighud	01/Jul/24	02/Jul/24	DONE
3	MIS611-58 Stakeholder Analysis and Persona Development	Joseph Martin Gatmaitan	03/Jul/24	10/Jul/24	DONE
3.1	MIS611-10 Update overview of all key stakeholders	Haide.Comighud	03/Jul/24	05/Jul/24	DONE
3.2	MIS611-11 Create customer personas	Joseph Martin Gatmaitan	03/Jul/24	07/Jul/24	DONE
3.3	MIS611-12 Create empathy maps	Joseph Martin Gatmaitan	08/Jul/24	10/Jul/24	DONE
3.4	MIS611-13 Research the developed customer personas	Joseph Martin Gatmaitan	08/Jul/24	10/Jul/24	DONE
4	MIS611-59 Problem Definition and Requirements Gathering	Renata-Bernadet Patachi	06/Jul/24	13/Jul/24	DONE
4.1	MIS611-14 Define stakeholder requirements using MoSCoW	Renata-Bernadet Patachi	06/Jul/24	11/Jul/24	DONE
4.2	MIS611-15 Complete customer journey map	Renata-Bernadet Patachi	11/Jul/24	13/Jul/24	DONE
4.3	MIS611-16 Articulate the problem statement that will be solved in ...	Haide.Comighud	12/Jul/24	13/Jul/24	DONE
5	MIS611-17 Milestone 1 - The scope of the project and the empathise ...	Renata-Bernadet Patachi	14/Jul/24	14/Jul/24	DONE
6	MIS611-60 Prototyping and Design Thinking Implementation	Ivica Gokchevski	10/Jul/24	28/Jul/24	DONE
6.1	MIS611-18 Develop wireframes and interface designs	Ivica Gokchevski	10/Jul/24	28/Jul/24	DONE
6.2	MIS611-57 Define cybersecurity requirements	Rene Allen Garcia	10/Jul/24	28/Jul/24	DONE
6.3	MIS611-62 Develop AI-driven strategy	Rene Allen Garcia	15/Jul/24	28/Jul/24	DONE
7	MIS611-19 Milestone 2 - Prototype, test and implement elements of t...	Rene Allen Garcia	23/Jul/24	23/Jul/24	DONE
8	MIS611-61 Final documentation and Presentation	Renata-Bernadet Patachi	22/Jul/24	20/Aug/24	IN PROGRESS
8.1	MIS611-20 Document final solution	Haide.Comighud	22/Jul/24	18/Aug/24	IN PROGRESS
8.2	MIS611-21 Present solution	Joseph Martin Gatmaitan	20/Aug/24	20/Aug/24	TO DO

Conclusion

The comprehensive AI-driven strategy for Giverly aims to revolutionise the philanthropic landscape by integrating cutting-edge technologies to enhance user engagement, increase donations, ensure regulatory compliance, and improve operational efficiency. This client report outlines the plan, beginning with the ideation and prototyping phases that foster creativity and innovation through brainstorming and iterative testing. Accessibility requirements are detailed to ensure inclusivity and equal access for all users. Cybersecurity considerations are thoroughly addressed, highlighting the need for robust security measures to protect user data and compliance with UAE regulations. Wireframes and interface designs provide a visual blueprint of the app's structure, ensuring a user-friendly and intuitive experience that drives higher user satisfaction.

The AI-driven strategy includes key features such as AI-powered micro-donation, Virtual Reality Empathy Simulator, Real-Time Donation Tracking and Impact Report, AI-enhanced security and Fraud Detection, and Machine Learning for Personalized Recommendations. These features, supported by advanced AI tools and technologies, align with Giverly's mission to create a secure, engaging, and efficient platform for charitable activities. Implementing this strategy will strengthen donor relationships, drive continuous and increased contributions, and support Giverly's growth and sustainability in the philanthropic sector.

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