

RESCUE PETS: GAMIFICATION BASED ANIMAL RESCUE SYSTEM OF AKLAN ANIMAL REHABILITATION AND RESCUE CENTER

A Special Problem
Presented to
the Faculty of the Division of Physical Sciences and Mathematics
College of Arts and Sciences
University of the Philippines Visayas
Miag-ao, Iloilo

In Partial Fulfillment
of the Requirements for the Degree of
Bachelor of Science in Computer Science by

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Abstract

The current available web-based systems are user-friendly because they are simple to use, but they are not particularly interesting and interactive to users. It merely displays basic information and gives a few tasks for the user to complete. Rescue pets: gamification-based animal rescue system of Aklan Animal Rehabilitation and Rescue Center aims to design and develop an animal rescue system that provides better engagement between the stakeholders of the system and the Aklan Animal Rehabilitation and Rescue Center itself by implementing gamification features and applying log-in features in the system being built. Gamification which is the primary feature applied in the study is the process of incorporating gameplay principles and game thinking to increase user engagement and resolve issues. Log-in features were also used to improve user and system engagement by allowing users to log in to their accounts so that transactions made in the system is monitored through users' accounts.

Keywords: Rescue Center, Gamification, Log-in.

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Chapter 1

Introduction

This chapter introduces the study conducted by the researchers. This includes the overview of the current technology, the statement of the problem, general and specific objectives, the scope and limitations of the research, and the significance of the research.

1.1 Overview of the Current State of Technology

The Animal Welfare Act (1998), the Wildlife Resources Conservation and Protection Act (2001), and many supporting Administrative Orders govern many processes and facilities that affect animal lives in the Philippines, such as farm animal transport and pet shops. It is recommended that the Philippines' government consolidate all animal welfare legislation and jurisdictions into a single government department with adequate resources for education, enforcement, and continuing to improve animal welfare. It is also recommended that the government revise and reassess all Administrative Orders affecting animal welfare to ensure that they are in line with modern OIE standards and current scientific thinking. Furthermore, the Philippine government is strongly encouraged to prohibit cruel practices such as fur farming, keeping wild animals as pets, and long-distance animal transportation. Additional legal and policy recommendations are linked to each Animal Protection Index (API) indicator and are included in the relevant sections of this report(Philippine Animal Protection, n.d.).

Many animal rescue centers and organizations are already in place throughout the country. These animal rescue centers have their own web-based systems that allow them to operate not only physically, but also virtually. These rescue centers' web-

based systems provide information about the various services they can provide to rescued animals. The systems allow for online adoption applications, cash or in-kind donations, and volunteer work at the rescue center. A vision statement, mission statement, successful projects and programs, contact information, and social media accounts are some of the information that is also provided in the system.

1.2 Problem Statement

The animal rescue systems of various animal rescue centers can help in supporting Administrative Orders that govern many processes and facilities that affect animal lives in the Philippines by providing web-based systems that assist users or aspiring pet owners in looking for new homes for pets abandoned by their owners or pets separated from their family after birth.

The web-based systems currently available are user-friendly because it is simple to use, but it is not particularly interesting to users. It lacks user engagement because it only displays basic information and provides a few activities for the user to do. It is simple to use because there is no need to log in, but it does not allow you to save the transactions you generate in the system. The study aims to build a more interactive system by applying gamification and log-in features.

1.3 Research Objectives

1.3.1 General Objective

The general objective of this study is to design and develop an animal rescue system that provides better engagement between the stakeholders and the Aklan Animal Rehabilitation and Rescue Center.

1.3.2 Specific Objectives

The specific objectives of the study are the following:

1. Create an animal rescue system where users can:

- Donate cash for AARRC;
 - Adopt available stray animals from AARRC; and
 - Volunteer work in AARRC.
2. Create an animal rescue system where the admin can:
 - Track donations from the users;
 - Monitor list of adopted animals from AARRC; and
 - Update volunteer applications for AARRC.
 3. Implement a gamification feature in the system by having a virtual pet that records points for every activity done by the user.

1.4 Scope and Limitations of the Research

The study focuses on designing a system for a local animal rescue center, which is the Aklan Animal Rehabilitation and Rescue Center. This study focuses on the application of gamification features to the existing system of the chosen animal rescue center and allows account creation and automatic log-in when using the system.

1.5 Significance of the Research

The study is significant to the following:

AKLAN ANIMAL REHABILITATION AND RESCUE CENTER. This study helps the AARRC provide better services to the public in terms of rescuing, adopting, and caring for stray animals. This also assists the rescue center in finding more people willing to help not only these animals, but also other recipients of the funds collected by the rescue center.

AKLANON COMMUNITY. This study helps in adding a way to improve pet health in the community of Aklan. This study assists the Aklanon community in locating an animal rescue system that cares for their rescued pets. It also helps them locate rescue organizations when they want to adopt a pet or make a donation.

PET LOVERS. This study provides satisfaction to pet lovers who want to adopt pets not only from Aklan but also from nearby places.

COMPUTER SCIENTISTS. This study is an important step toward continuing to provide information to the public in order to promote the use of gamification features to increase the level of engagement between a user and a system.

RESEARCHERS. This study serves as baseline data to conduct better research and build new systems in the future regarding animal rescue systems. Future researchers will be given the responsibility of improving the present study.

Chapter 2

Review of Related Literature

This chapter presents and reviews related literature and studies, which have bearing on the conduct of the study. The literature and studies cited include local animal welfare systems, gamification features and applications, and some integration of account creation and federated login in building a system.

2.1 The Rise of Animal Welfarism

The 1944 legal reforms were portrayed as a set of rules in the government proposal response and resolution to a long list of animal-treatment-related issues. The old anti-cruelty legislation law from 1921 should be replaced with an animal protection law that provides a comprehensive regulatory framework to set standards for preventing animal mistreatment in a broader sense. The primary social function of the old law was to regulate excessive animal use and to police the borders of animal exploitation. The use of animals had changed and evolved because of the anti-cruelty regime. Things like the expansion of large-scale breeding and farming, longer and more frequent animal transports, an increase in the number of animal experiments, and so on were bound to raise new questions about the systemic nature of animal abuse and was the real problem that needed to be addressed (Svard, 2015).

Svard(2015) believes that the 1944 reform's most important contribution was not simply expanding legal protection for nonhuman animals, but also bringing closure and political control to a progressively broken discursive regime. The 1944 reforms achieved what proponents of the current system had fought for in the past: a fully contextualized problematization that would have been troubled by norms

contradictory to the human-animal relationship.

The 1944 reform advocates to broaden the legal protection to animals by legalizing the punishment to animal abusers. However, the present study focuses on rescuing and taking care of the stray animals found in the streets by building a web-based system responsible for these activities.

2.2 Philippine Animal Welfare Society

The organization is dedicated to animal protection and humane treatment. The organization advocates for the elimination of animal cruelty and pet neglect. In addition, the organization works to educate and disseminate information about animal welfare and protection.

People donate cash or in-kind to the organization, they adopt a pet, and the organization rescues animals and rehabilitates them. The organization does not accept previously owned pets. Humane education, where educational tours, interviews, school visits, and seminars are provided for free, spay and neuter surgeries, where a low-cost clinic is available to the public, animal therapy, and disaster relief operations are among the other programs offered by the organization(Philippine Animal Welfare Society, 2021).

The organization uses a web-based system to post and record all activities. The system includes options for adopting, donating, and volunteering. The current study will also create a system for a local organization concerned with animal welfare and protection. The Aklan Animal Rehabilitation and Rescue Center has been chosen as the local organization.

2.3 The Albert Foundation

The Albert Foundation/Stiching Albert is a registered charity in the Netherlands that collects donations and sponsors the Aklan Animal Rehabilitation and Rescue Center. It was founded by Michel and Neressa Van Der Kleij. The foundation has a web-based system in place for AARRC to post information about the rescue center. The AARRC rescues animals for them to be sponsored or adopted and live a better life. Most of the animals came from Aklan's streets, but only a few came from people who no longer wanted to care for their animals because dumping animals is strongly discouraged by the center.

According to the Aklan Animal Rehabilitation and Rescue Center (2020), supporting the local community by purchasing and hiring locally is an integral feature of the AARRC philosophy of "Animal Welfare Equals Human Welfare." We cannot exist without our fellow beings, and they require our assistance. We start serving the human community by improving public health and safety through our work with stray animals.

The web-based system is simply one in which you do not need to log in because you can access everything about the AARRC without creating an account. The system contains information about the founder, the mission and vision, the programs that have been implemented, and instructions on how to donate. Their email, Facebook, Twitter, Instagram, and YouTube accounts are also linked by the system. The system is available in English, Dutch, and Spanish.

The current study adapt AARRC's current system while adding new features such as account creation and having a virtual pet. The current study adds account creation and gamification features to the system to increase user engagement. By including account creation, users were able to create an account before engaging in any transactions with AARRC. Account creation also aids in the monitoring of users who have a virtual pet that is automatically gifted to them after creating an account.

2.4 Gamification

Merriam-Webster defines gamification as the process of incorporating games or game-like elements into something (such as a task) in order to increase participation. A study titled "Does Gamification Work?" was conducted. — A Literature Review of Empirical Studies on Gamification" (Hamari et al., 2014) examined 24 scientific studies that shared a high-level research question (not always clearly stated): Does gamification work? The various studies examined use a variety of gamification mechanics . According to the findings, the majority of the studies examined yielded a positive outcome and benefits. It is also important to note that some of the studies had limitations, such as a limited sample and a lack of control groups. Gamification is the method of using gameplay mechanics and game thinking to user engagement and resolve issues (Cunningham et al., 2011). It is a powerful tool that encourages players to complete a task or use customer support that they would not have done normally. Giving users a satisfying and rewarding experience will not only provide them with entertainment, but will also give people something to look forward to and encourage them to use the service repeatedly.

Moreover, Zichermann and Cunningham think that the player is the root of gamification. In a gamified system, the user's or the player's motivation to use the system drives the outcome. Therefore, understanding player motivation is paramount to building a successfully gamified system (Cunningham et al., 2011). A good video game values its player more than others, a developer listens to the opinion of the player of the game and provides patches for the game to be better. This should also be adapted in any gamified system as it is a powerful tool to gain more engagement and for the long-term success of the system. Predicting how the "players" of the system would act will allow the builder to reach the main objectives of the system.

The current study employs gamification features to improve user engagement. This is done by having a virtual pet after logging in. Each transaction made by the users equates to a certain number of reward points earned by the virtual pet. Once the virtual pet has accumulated a certain number of points, it will level up and change appearance.

2.5 Gcash Forest

Gcash forest is a GCash gamified in-app feature that allows users to plant virtual trees via the Gcash app. Green Heroes are people who use the Gcash forest. After three days, the users collect Green Energy, which is then used to plant trees. Previously, the period for planting trees was only 24 hours.

The feature helps save the environment through the Gcash app, which has 20 million users. Despite the situation, Martha Sazon, CEO and President of Gcash, believes that the changes will allow users to plant more trees because digital transactions are becoming the new norm (Manila Republic, 2020).

According to Anthony Tomas, Mynt CEO, Gcash forest addresses the issue of citizens who want to help save the environment but don't know-how. Making a difference is much easier now that they can plant trees with their smartphones. The feature is modeled after Alipay Ant Forest, which is run by Ant Financial. Gcash Forest worked in partnership with the Department of Environment and Natural Resources (DENR), the World Wildlife Fund (WWF), and the Biodiversity Finance Initiative (BIOFIN). The DENR made available land resources, the WWF equipped trees and workforce, and BIOFIN provided monitoring expertise (Adobo Magazine Online, 2019).

The present study uses a gamified feature as well, but instead of virtual trees, a virtual pet is used because the system is for animal rescue. The Gcash forest

harvests green energy, whereas the present study employs digital points to fund the virtual pet. The virtual pet's goal is to validate every user's help and support in saving and protecting animal strays via the system built.

2.6 Automatic Login of Account

The internet is a vast world, and its user base is growing by the day. This is more common now that the pandemic has resulted in lockdowns that have brought everything online. People create various user accounts, social media sites, educational sites, lifestyle applications, and a variety of other things. As a result, there are many accounts signing in credentials to remember, and we all know how passwords can be a pain, and we can't help but forget them. Some users may choose to use the same password on multiple accounts in order to avoid forgetting it, which poses a significant security risk. Using federated login is one way to avoid this problem without jeopardizing the user's safety. Federated login means that the user authenticates by using a third-party service, such as Google or Facebook, rather than entering credentials or profile information again (*Google Developers*, n.d.).

A lot of web-based and even mobile applications make use of account signing. That's why we often forget our credentials. The present study makes use of the automatic log-in of accounts to enable the users to log-in their account easily without the need to input credentials.

Chapter 3

Research Methodology

This chapter discusses the activities and methodologies employed by the researchers in conducting the study. These include the design of the study, persons involved, technical and software specifications, testing and operation, system implementation, methods and procedures.

3.1 Design of the Study

Aklan Animal Rehabilitation and Rescue Center is the province of Aklan's only animal shelter. This research focuses not only on the development of an animal system, but also on the incorporation of gamification and log-in features to it.

Merriam-Webster defines gamification as the process of incorporating games or game-like elements into something (such as a task) in order to increase participation. Zichermann and Cunningham (2011) believe that this framework for understanding gamification is both powerful and adaptable, as it can be easily applied to any problem that can be solved by influencing human motivation and behavior.

The agile methodology is used by the researchers in the development of the system. Agile Methodology is a practice that promotes continuous testing and development throughout the development lifecycle of the system. In the Agile model of software testing, both development and testing activities are carried out concurrently. It is beneficial because the chosen animal rescue center will be given frequent and early opportunities to inspect the product and make judgments and revisions to the system before it will be implemented. (*Guru99*, 2021).

3.2 Persons Involved

ADVISER. Being the co-author of the study, this person helps and supports the researchers on the duration of the conduct of the study.

RESOURCE PERSON. Representative from Aklan Animal Rehabilitation and Rescue Center is the resource person to ensure that the system is appropriate for the users and the information is validated from the organization.

PROGRAMMER. The programmer develops the appropriate system to perform methods and generate results in applying the gamification and log-in features.

RESEARCHERS. The researchers perform the handy activities from inquiry, consultation, data gathering, system development, testing until the study is accomplished.

3.3 System Specifications

3.3.1 Use Case Diagram

3.3.2 Functional Requirements

The following system's functional requirements are applicable to both the random user and the system administrator:

1. The system enables the user to create an account.
 - The user will enter credentials such as username, email, and password.
 - Verification of account by checking if:
 - Username is still available.
 - Email is active and not the same user.
 - Password includes needed characters.
 - Password is the same as the confirmed password.
 - Account is added to the database if the input credentials are valid.
2. The system enables the user to log in to their accounts.

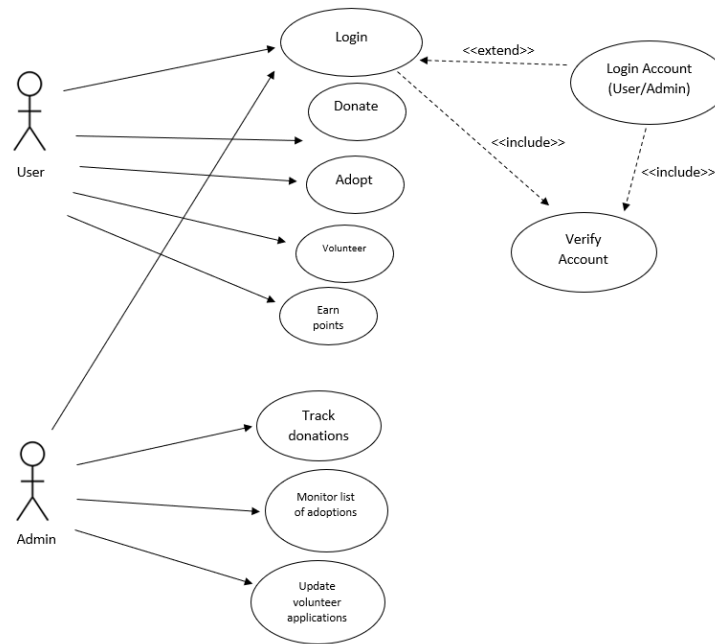


Figure 3.1: The figure shows the use case diagram for the user and admin of the system.

- The user provides the username and password registered in the database.
 - If credentials match an account registered in the database, access is granted; otherwise, access is denied.
3. The system enables the user to visit profile page.
 - The profile page consists of three subpages:
 - main page
 - information page
 - contacts page
 - Information saved is displayed on the profile page.
 4. The system enables user to modify profile information.
 - Profile page is updated once new information is provided.
 - Old information is replaced in the database.
 5. The system enables user to log-out.
 - The user will be logged out of the system when logout is clicked.

The following system's functional requirements are applicable to the random user:

1. The system enables the user to own a virtual pet.
 - The virtual pet is automatically owned by the user who has an account.
 - The user can choose to have either a cat, a dog, or a rabbit as a virtual pet.
 - The virtual pet levels up its appearance once the user reached a certain number of virtual points.
2. The system enables the user to earn virtual points.
 - The virtual points serve as the basis for leveling up.
 - Leveling up includes additional accessories for the virtual pet.
3. The system enables the user to adopt a pet.
 - The list of animals available for adoption is available to the user.
 - Names and descriptions of the animal are displayed for the users to choose who to adopt.
 - An application form is needed to be filled out.
 - The information will be saved to the database.
 - The list of animals available for adoption is updated from the database.
 - Virtual points is then earned by the user.
4. The system enables the user to volunteer at the Aklan Animal Rehabilitation and Rescue Center.
 - An application form is needed to be filled out.
 - The information will be saved to the database.
 - Virtual points is then earned by the user.
5. The system enables the user to donate to the Aklan Animal Rehabilitation and Rescue Center.
 - The system will redirect the user to the AARRC main page.
 - Mode of donation is provided to the user for donations.
 - The user may choose what mode of donation to use.
 - Once donation is done, the information will be saved to the database.
 - The user will be redirected again to the system.

- Virtual points is then earned by the user.

The following system's functional requirements are applicable to the system administrator:

1. The system enables the admin to monitor the list of animals available for adoption.
2. The system enables the admin to monitor and update the list of volunteers for the rescue center.
3. The system enables the admin to track donations made by the users.

3.4 User Specifications

The possible users of the study are the following:

RANDOM USER. This user can create an account to use the animal rescue system. This user can donate, adopt and volunteer to AARRC through this Rescue Pets animal rescue system.

SYSTEM ADMINISTRATOR. The admin is responsible for managing the overall activity of the random users of the system. This user can track donations from the users, can monitor list of adopted animals from AARRC and can update volunteer applications for AARRC.

THESIS ADVISER. The thesis adviser is the person with authority having the full knowledge on the special problem being conducted. The thesis adviser guides and provides meaningful advises to the researchers on the duration of the research activities.

RESEARCHERS. The researchers serve as the first user and beneficiary of the study. If implemented, the researchers are the primary user to engage in doing activities in the system such as donating, adapting and volunteering in AARRC.

3.5 Technical and Software Specifications

Various software applications used for the study are considered during the planning and development phase conducted by the researchers.

- Microsoft Windows 10 - this tool was used as the main operating system for developing the system.
- TexStudio and Microsoft Word - this tools were used for documentation purposes. They were used for the compilation of initial drafts and final copy of the SP document.
- Zoom application - was used for consultations and meeting with the adviser since face-to-face is not possible, this application was used by the researchers for consultations and meetings with the adviser.
- Github - Github was used for version control of the system and for easier collaboration. Github lets the researchers work together remotely.
- Adobe XD - Adobe XD is a prototyping tool for user experience and interaction designers. The tool was used for the initial prototype of the system.
- Sublime Text - it is a text editor used by the researchers in documenting the codes used to build the system

3.6 Procedures

3.6.1 Development of the System

This is the phase where the plan and design of the system are developed into a working system.

Account creation is a method implemented in the study, so users must create an account before engaging with the system. The user can be a random user or a system administrator. In creating an account, the username, email, and password are asked from the users.

Account verification is needed for the users to finally log in to the system. The database will be accessed if the following user is already available or not.

A virtual pet is automatically owned by the user once the account is created. The user can choose between a cat, a dog, or a rabbit as their virtual pet.

Gamification is applied in the system by recording the engagement of the user with the system by the use of virtual points. Every transaction made by the user has an equivalent number of virtual points.

The user can donate, adopt, and volunteer to Aklan Animal Rehabilitation and Rescue Center through the system. The main database and the database of the virtual points are updated after every transaction of the user.

The admin can track donations, monitor a list of volunteers, and animals available to adopt. The admin can access the activities of the user during the engagement with the system.

3.6.2 Testing and operation

This is the phase that ensures the system's operability and functionality. Testing is necessary to elicit supplementary details and information to enhance and improve the system.

People involved in the testing were asked to provide suggestions and recommendations for enhancing and improving the system.

The study is tested by the following users: a) AARRC representative b) researcher's adviser c) researchers d) random users and e) system administrator.

3.6.3 System Implementation

The system's possible implementation, as envisioned by the researchers, is web-based. The mobile development of the system is further pursued based on the researchers' decision or can be done by future researchers who will conduct the same study. Because the study's focus is on the application of gamification and log-in features to the animal rescue system, the study will be implemented after careful and successful testing and operation of the system by domain experts.

Chapter 4

Results and Discussions/Analyses

This chapter discusses the results and analysis of the study. As specified, the study focuses on building an animal rescue system that implements gamification and login features for the Aklan Animal Rescue and Rehabilitation Center in Kalibo, Aklan.

4.1 Results

The state of the current web-based systems of animal rescue centers are straightforward and simple. It is important to make it as user-friendly as possible so that it would be easier for the users to engage in the system. But simplicity does not always mean the more users would engage on it. Gamification integrates the “human” to the system and is considered in designing that motivates more users to take part in using the system.

There are general ways in finding out what motivates the user of an animal rescue center, the researchers used that motivation to drive the users to do certain actions they would not normally do. The specific motivation for a web-based animal rescue system that the researchers used is a virtual pet that evolves when it will reach a certain level. The way to gain experience points to level up is by doing transactions in the animal rescue system like donating, adopting, and volunteering.

4.1.1 Sign-up Page

The sign up page shows a form where the user will input credentials such as username, email, and password. These credentials are used to make an account for the user to access exclusive features such as the virtual pet. The user can also use third-party services to provide necessary information for signing up such as Facebook and Google.

4.1.2 Login Page

The login page allows the user that has already an existing account to sign in to the system. The user is asked to input the username and password or either use third party services such as Facebook and Google to login.

4.1.3 Home Page

The homepage of the system consists of three sub-pages: the main page, the information page, and the contacts page. Each page can be accessed either by scrolling or aside clicking each corresponding button at the navigation bar above the home page. In the navigation bar. The main page has a “Join Now” button where users can create an account and sign up.

4.1.4 Profile Page

The homepage of the system consists of three sub-pages: the main page, the information page, and the contacts page. Each page can be accessed either by scrolling or aside clicking each corresponding button at the navigation bar above the home page. In the navigation bar. The main page has a “Join Now” button where users can create an account and sign up.

Appendix A

Acceptance Letter



University of the Philippines Visayas
College of Arts and Sciences
Division of Physical Sciences and Mathematics



May 6, 2022

Ms. Jenie Mae Gumban

Shelter Coordinator

Aklan Animal Rehabilitation and Rescue Center

Dear Sir/Ma'am:

Good Day!

We are 4th year students of Bachelor of Science in Computer Science from University of the Philippines Visayas. We are having our study about animal protection and we are planning to make an animal rescue system where people can adopt, donate in-kind or cash, or volunteer to help in the animal shelter. The system focuses on the application of gamification features to the existing system of the chosen animal rescue center and allows account creation and automatic log-in when using the system.

In line with this, we are asking if we could partner up with your rescue center, **Animal Rescue System of Aklan Animal Rehabilitation and Rescue Center**. This will include asking some information about your animal shelter and adapting some features from your current animal rescue system.

This request is submitted for your kind consideration and approval. Thank you and God speed!

Very truly yours,

FELY MAUREEN N. CONANAN

Researcher

JAYVEN C. LUPERA

Researcher

APPROVED BY:

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Appendix B

Resource Persons

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