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Spirit Snap (SS)

"SS is a location-augmented game centered around spirits."

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ARIN3640 CGS - Spirt Snap (SS) - Proposal
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Introduction

Abstract

"SS is an adventure-strategy-collection game that uses a player's current environment as the landscape, adapting continuously to their play routine and location, down to the finest detail. Through augmented reality, the player can interact with spirits, discovering and collecting, via their camera phone, and trading and battling with other players or spirits."

Target Platform

SS will be played from a mobile device with a camera, such as an iPhone, utilizing data from its accelerometer, compass, microphone, gps and wireless connections.

Target Audience

SS will be targeted to a wide audience, from young 5 year olds to the elderly. This adventure-strategy-collection game targets both male and female gamers, with an ability to simultaneously support both passive and competetive play styles. It aims to possess the ability to permeate all forms of activities *"to make communal spaces...meaningful and attractive", (Gehl, 2008)*. Players will primarily be drawn from the casual game market, and those with an interest in the history of their environments. Like similar games such as Nike-Run and Pokemon, SS holds the potential to induce it's own social culture around it.

Unique Selling Points

SS' great and unique selling points are its indepth integration of augmented reality into it's gameplay, it's ability to bring new perspective to a player's common landmarks. This is supported by it's locative integration with the immediate environment, drawing mass amounts of data from both historical and real-time events.

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Game Mechanics

Core Game Play

The core gameplay of SS involves scoping for events, and Battle Scenes. Scoping is done from a general bird's eye perspective in a 'GPS Map', which is then narrowed down to 'Search Mode' whereby the player uses their camera and stereo sound to locate characters. It is this sense of *"exploration that embeds a playful meaning to the game space." (de Souza e Silva, Hjorth, 2009)*. Battle Scenes are turn based systems with the player competing against one opposing side.

Game Flow

"In map mode, you scan your radar map for the locations of characters within your general area. When in the direct vicinity of a character, you can go into 'Search Mode' and with the aid of your enhanced mobile camera-device and earphones, you can locate and then interact with said character. If the character you see through your camera is a spiritual creature, you can capture it by shooting a clear image of it. You cannot simply capture such spirits on higher levels with just shooting a clear image of it, instead you have to weaken it first. Various interactions may lead to battles, this is where you strategically command your creature with succinct actions, and supporting it with spells in order to win. Battle cutscenes can occur during such interactions. You can also check out your progress and history through your Grimoire which includes all the photos you have taken (with two versions of each photo, with and without an augmented overlay), and a journaled history of spiritual creatures and their characteristics."

Characters as Game Play Elements

There are four categories of characters within SS. These are the spirits, spirits (NPC), human avatars, and the augmented environment itself. Characters are the core game play elements of Spirit Snap. Their visual behavior is essential in engaging the player as it is *"the surface impact of a character's movement, appearance...(reflective of) the player's actions" (Isbister, 2006)* that creates a symbiotic relationship between player and avatar (or spirit).

Spirits are the centre of the world, and gameplay, of Spirit Snap, they could be NPCs, big bosses, but most commonly, the player will encounter them in the wild or as summoned spirits to an opposing team they must battle with their own summons. These spirits are influenced, and can be catergorised, by many variables, including weather, time of day, elevation, noise levels, player's travelling speed (eg. on a train), if they're passive or aggressive, sea, land or air-based, and their elements (e.g. fire, water, earth). Spirits can be aided in battle through items that the player can collect throughout the game and use on them, and also have special talents and attacks.

NPC spirits that can oversee spirits also fit into these variables, but to a much less restrictive format. They are not to be confused with normal spirits, these npc spirits serve as a deliverer of information and other quests. The player interacts with these NPCs commonly through in-game conversation or battle, and are sometimes given items, tasks, knowledge or creatures depending upon their interactions with them.

Avatars are customizable, and utilized to represent human players, within the social and multiplayer, side of the game.

The augmented environment is a character in itself, influenced by the player's narrative progress, play style, and details about their current location. The player also utilizes the environment itself as a game play element, moving to specific locations to change the nature of a game, manipulating elevation, noise-levels and their own travelling velocity to change the game's environment and battle directions. The environments are also affected by current and past events, for example flooding in the area brings about spiritual creatures of the water nature.

Game Physics and Statistics

In map mode, translucent circles indicate the rough location of spirits (whereby NPC spirits and avatars have pin-point locations). The color, texture, speed and movement of a creature's circles' are generated from a terrain's and creature's statistics (which can be found within the Grimoire). In search mode, creatures are similarly effected by their characteristics and correspondance with the environment, having personalities and calls effected by their level of shyness/aggressiveness, how well they blend with the environment, and their moods.
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Artificial Intelligence

Environment Generation
AI will process data from the player's narrative progress and the current environment through a mass database, accelerometer, wireless networks, and microphone to generate a live in-game environment that is augmented on top of the real.

Narrative Progress
As each player will play the game in different environments, narrative progress needs to be ensured through an AI that adapts to play styles and the player's current progress.

Visual Augmentation
AI will also handle the generation of spirits and their potential visual and sonic augmentation within 'Search' (Augmented Reality), 'Battle' Modes, and cut-scenes.

Opposing Organization
AI opponents will create opportunities for battles and have the players encounter different, harder playing styles.

Multiplayer

Multiplayer gameplay within SS can emerge through battle or passive play.

Battles can be multiplayer and can take the form of quests whereby humans (and npcs if there are available spots) can band together to battle bosses and complete various missions in a co-operative manner. Human's can also go head to head against each other in battle to test out their skills through their summoned spirits. In a more passive environment, humans can gather together and observe their spirits interact with each other, they can exchange items, knowledge, or creatures. SS is also integrated with social networks such as facebook, so a player will be aware of relevant events that have occured to others in their vicinity and their friends, easily issuing out challenges and boasting about their accomplishments.

Technical Specifications

In-Game Processing can handle simple systems such as open GL Map generation, battle system elements, short cutscenes and data collection. Whereas a server will handle mass data aggregation and referencing to co-ordinate the generation of a real-time environment, as well as heavy cutscene generations. The two processes will communicate with one another through a wireless network.

Similarly, in multi-player gameplay, peer-to-peer connections can handle direct, sandboxed scenarios such as exchanges. Whereby a server-to-peer connection would be required to handle large scenarios such as big quests and significant cutscenes.

Developing the following systems: Artificial Intelligence to adapt to different environments and play styles, SS' integration of Augmented Reality, and the Mass aggregation of data - it's filtering and AI-based algorithms, will be greatly beneficial to future projects. Such pioneering systems have an intensive of re-use value and can also be sold at a high profit.

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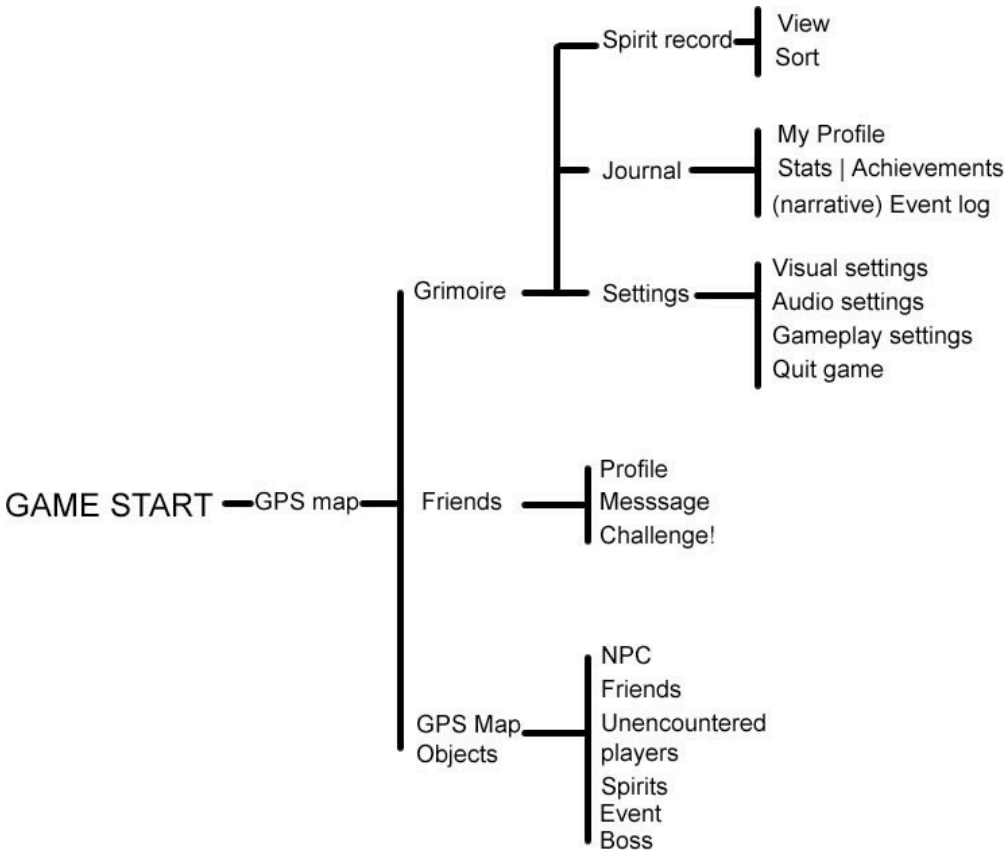
User Interface

To begin, the game will feature a persistent artwork that evokes the main premise of the game (that of supernatural battling) The startup splash graphic serves a dual purpose, as it will be displayed as the main title image as well as (used in greyscale or single-colour saturation) for menu and text box backgrounds and loading screens for the game. Secondary persistent artworks may also be considered as overuse of the main splash graphic may not be desirable.

Moving onto the UI, the user interface must be simplistic to cater for (or at least satisfy) the performance limitations of the iPhone platform (namely screen resolution and actual hardware performance.) A simple interface should be inconspicuous or at least not distracting the player from the overall gameplay experience (Oppermann, 2002) The main features of the interface centres on the two main gameplay modes of the GPS map and the Search/Battle augmented perspectives, using buttons for menus, text bubbles for map objects and conversations and finally, text object popups for boss and event alerts. Noted by Boundy in his "*ACM SIGSOFT Software Engineering Notes*", menus and buttons must prioritise ergonomics; they must flow logically, be well visualised and ultimately, user friendly. Button and status icons need to effectively and appropriately portray their functions to maximise user ergonomics. Below is an example of the current UI flowchart. Important sections of the UI will be discussed below.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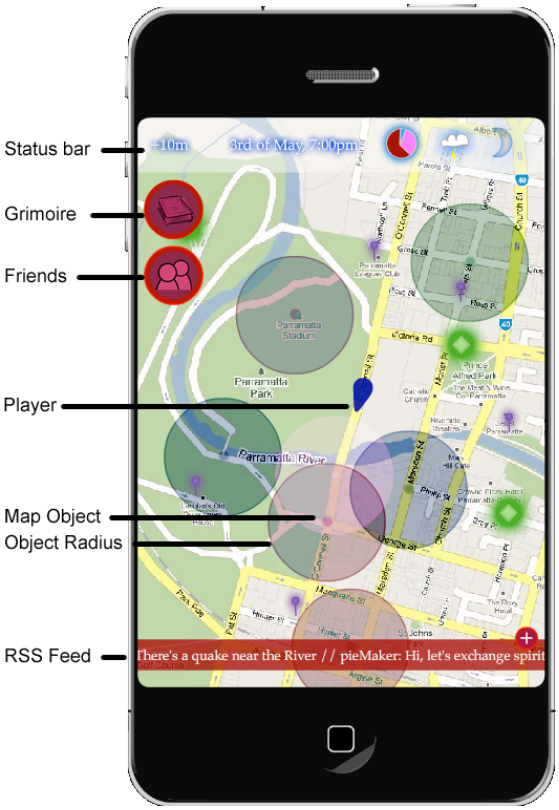
The GPS map serves as a "launching pad" (Shneiderman, 1997) for gameplay through the Grimoire and Friends menus. The GPS map itself will feature a UI overlay displaying said menus, text object popups, RSS status bar and most importantly, GPS map objects. These map objects are indicators for NPCs, random spirits, bosses, other players (either shown as friends or un-encountered) and event locations. These abstract representations of possible scenarios serve to *"whet the players appetite"* and to *"get the player excited about their options" (Roger, 2009)*. For organisational purposes, we will concentrate on the GPS user interface, whilst the battle UI will be explained later.



The GPS map only has two menu buttons - "Grimoire" and "Friends". The Grimoire menu contains nearly everything necessary for the players to effectively play the game, while the Friends menu allows for users to keep track of their friends as well as organise meetings for socialisation and cooperative/competitive play. Originally, the Grimoire was merely a spirit-bestiary, but instead of making separate menus for Journal and Settings, we decided to combine both these menus into the Grimoire, making the Grimoire menu one of the interfaces the players would frequent the most; the Grimoire now contains Spirit Record, Journal and Setting menus.

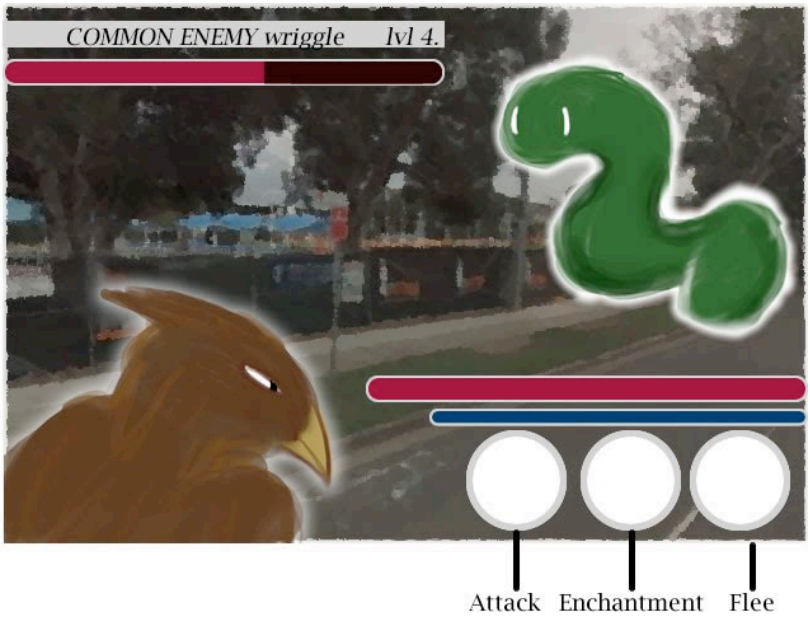
The Spirit Record occupies the most space in the Grimoire, as it performs a vital play function. The Spirit Record will allow players to keep track of what spirits they have encountered and various details of these spirits. Information may be gathered through analysis during an encounter or perhaps purchased from an NPC shop. The Spirit Record will allow several sort, view and compare functions, but overall is a "UI flow dead end" - the menus and submenus it contains lead nowhere. The Journal section of the Grimoire is similar to the Spirit Record as a "dead end". The Journal serves exactly as it is named, keeping track of the player's achievements, stats, allowing users to setup their in-game avatar, but most importantly, a plot event journal for the player's narrative experiences. Value is placed in this (according to Heeter et. al) as it allows users to keep track of their story, within a non-linear narrative being offered. Finally, the Settings menu brings the player to the technical section of the game where they may make changes to whatever overall game preferences they wish (as well as quit the game).

Going back to the GPS menu, players curious as to what the icons on their map mean find that the icons are selectable, to which a text box popup appears from the icon, displaying the details (or at least known details) of the map object.

Game Play elements

The search/battle modes of play represent ethereal encounters occurring between the player's world and the foe's. To track down these events/spirits/bosses, players must travel within a certain radius of said event; this being indicated on the GPS with a translucent circle to which the player must travel through. Along side the augmented reality features, graphical distortions and filters will be applied on the captured image [that you took when you started the battle etc] to emphasise the other-worldliness of the spirits and the plot at hand as well make interesting the battle screens (which run the risk of becoming incredibly repetitive.) Examples of such distortions and filters may range from fisheye lense effect, tilted or flipped images, inverted colours, oversaturated or de-saturated images.

Battle mode also requires much polish to actual the characters (both human NPCs and spirits.) Attacks from spirits will be represented almost exactly like most typical RPG games, with simple animations on the part of the attacker, as well as some sprite or particle effects to represent the attack.

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Story

Group Events (Dungeon Quests)

Group events consists of two or more players cooperating together in-game. *"For cooperation to prove stable, the future must have a sufficiently large shadow . . . the importance of the next encounter between the same two individuals must be great enough to make [noncooperation] an unprofitable strategy" (Axelrod, 1984)*. Through uncertainty in the difficult situations and new possibilities of play when involving other players, Spirit snap encourages group events and rewards the players well. Whether it be investigating a mission together, or tough challenges not possible to be played by one player, the level of difficulty are higher than regular single player missions. Complex investigation is required to gather information about these special quests. Also strategy and other tactics are needed to complete the mission with the other players. Group event missions yield greater rewards than normal missions, they are split equally among the players participating in the event and consists of gold and special items. The rewards don't include the beaten spirit as the spirit(s) are of a special category and so cannot be used by players.

Individual Events
Meta-Narrative

Players belong to an Exorcist organisation. In this world there is an opposing rival organisation dealing with spirits, as a result of conflicting ideals and directives, both organisations are constantly at battle. Rival organisation members can plant their own summoned spirits to do harm, as an exorcist member, it is the player's task to quell the unrest and restore balance to the spirit world.

Familiarity with the game elements come by *"remediate a pre-existing story...or draw upon a broadly shared genre tradition" (Jenkins, 2004).* In Spirit snap, they are drawn from the player's knowledge of superstitions and beliefs. The majority of the unrest are caused by factors such as natural disturbance (flooding, fires, lightning storms, etc.) or man-made disturbances (noise pollution, dumping of wastes, murders, etc). Occasionally there are times of the year where spirits become very active, for example fullmoon, All Hallow's Eve, Summer solace, Winter solace. Also there are generally more sightings of spirits around the leylines, which are the alleged alignments of a number of places of geographical interest, and places of spiritual significance, for example graveyards or places where accidents have happened. Fengshui also affects the spirits appearence. In areas with bad flow of energy, the spirits may have gathered there as they are trapped by the surrounding buildings and cannot pass on peacefully to the other world.

The players are given a vague description of the mission and it is up to them to find out the cause of the disturbances in the area. This type of story-telling creates dramatic tension by juxtaposing safety and danger (Aristotle, 335BC), whilst thoroughly engaging the player as *"Players love to feel in danger while knowing they are safe/in control" (Roger, 2009).* By investigating the history of the area, players will be able to uncover the reason behind the unrest and find the means to restore the area to its normal state. Restoring the area to its normal state may constitute the player capturing the spirit or simply putting them to rest by defeating them with their summoned spirit(s). Encountering spirits will automatically fill a bit of the player's grimoire with information about that type of spirit. The more encounters or capturing the spirit itself will provide their general history and details about their characteristics.

Different Types of Spirits

Nature Spirits
Spirits of nature include water, fire, air, earth, electric. Water spirits are generally found in areas of rain, flood or anything dealing with water. Fire spirits are found where there are fire and places of dryness where there is a lack of humidity. Air spirits are commonly sighted where there are high winds, for example when there is wind tunnel generated by buildings position, or high on cliffs. Earth spirits are usually among the earth where there has been disturbances, like at construction sites or places where the earth has shifted. Electric spirits are sighted when there is high voltage passing through an area, lightning storms bring them about as well as power surges and other such factors.

Spirits of the Dead
The deceased may be bound to the earth through obsessions, regrets and other strong emotions bringing about their attachments to this world. They may also have been unable to pass to the other world due to the position of buildings confusing their sense of orientation, or simply unfortunate events causing them to be forced to stay in this world. They could have been trapped by spirit summoners or other spirits which could control them.
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Luck Spirits
Luck spirits appear in areas where there is good or bad alignments with the flow of energy in the earth. Feng shui is an important factor for the types of spirits which appear in those areas.

Level Diagram

There is a gradual buildup in the difficulty in the missions. When starting out, players should not be overwhelmed by the missions, they will be introduced gradually to the systems of play. Once players become familiarised with the game's functions, they will be encountering a choice of more difficult missions. Missions will be of increasing difficulty and story will get more complex. Varying the difficulty levels are done by adjusting the spirits' hitpoints and strengths of attacks, defense and other stats. As well as the difficulty levels increase, the players will gain rewards suiting the achievement of completing the mission. The higher the difficulty rating, the better drop items will be gained when the mission has been completed. ~ And newer spirits, of a higher the level, will present themselves. This design essentially, changes the game world, and encourages further *"fun ... derived from the act of mastering knowledge" (Cook, 2007*) as a player is always looking to *"...lead[ing] to a better (game) world" (Pink, 2010)*.

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Technical Challenges

With any video game, there are hardware, and software challenges to consider, Spirit Snap is no exception to this. On the coding side of things, SS is fairly light, all except for the massive AI systems. These systems need to be able to handle superimposing virtual simulations on top of a real environment, augmented reality. They must also be able to generate intelligent ecosystems based o the aggregation and handling of mass amounts of data. The successful implementation of such systems would take into consideration the hardware that Spirit Snap runs on, in order to balance visual accuracy, quality, and latency. The hardware that handles the processes undertaken within Spirit Snap are either internal (run on the mobile device) or external (run on the servers). With internal hardware, the memory that the device can hold, along with the power of it's CPU and GPU are contributing factors to the visual responsiveness and quality of Spirit Snap. There are also issues of Wireless Connections and GPS (especially), being quite temporal in nature, so Spirit Snap will need to fluently handle situations where these connections may cut out. External Servers have a storage capacity and access speeds, this creates a balancing act between quality of generated cutscenes or data-intensive scenarios and the readiness at which these scenarios are loaded onto the device. In essence, Spirit Snap's main technical challenges are the AI Systems it has proposed, and the computing power that is available to generate and deliver it's environments.

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Prototyping

Development

In order to develop a proper prototype of Spirit Snap (SS), prototypes for Systems that support SS' augmented reality, it's environment's adaptive AI, and stereo audio system, must already be at a mature stage through the development cycle as the prototype will incorporate all these systems. With the provisions of these systems, the prototype of SS simply encompasses a tutorial level where the player is shown all possible game scenes and game mechanics. This is supplemented by a limited form of the Grimoire with roughly five possible creatures within the prototype. (A character generation system may be created to facilitate the design of a multitude of spiritual creatures).

Testing & Evaluation

Throughout the development phase, simple value adjusters would have been implemented to facilitate debugging and development, *"this programming approach, building accessible game design tools into a game prototype, is a technical strategy that incorporates and facilitates iterative design." (Zimmerman, 2003)*. A selection of these adjustable values would be used to test SS and evaluate it. These parameters and other recorded data could cover aspects such as game flow (for example, the time a player spent defeating a boss, and the variety of attacks he and his opponent used) or even visual appeal (allowing testers to adjust the appearance of their characters through the character generation system, along with other visual parameters). The data collected from programs that record and interpret a tester's actions during play, along with the in-build data of altered parameters, allows the assessment of a large range of potential directions Spirit Snap could take. Evaluation from testing allows Spirit Snap to evolve iteratively into a better prototype, ready for more testing and evaluation.

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