Visual Novel Controller

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***Abstract*—Visual novels have been played through a variety of platforms with a variety of controls. This paper sets out to examine the controller used by players to play visual novels. It will examine the pros and cons of current controllers for visual novels and look at what improvements can be made. Finally it will examine why existing issues need to be solved and what ramifications may result if the issues are left unresolved.**

***Index Terms*—visual novel games, controller, education, key configurations**

I. Introduction

Visual novels are a genre of games that engage players through heavy narrative elements, some visual elements that illustrate settings, and limited gameplay. Through gameplay, players are able to take an active role in the story by selecting options that influence its outcome. They are also able to dynamically control aspects like plot, transition, speed, story beats, media, and delay [4]. Its key appeal, the autonomy to choose, is what immerses players into the narrative of a video game format rather than that of a movie or novel. Oftentimes, they're played in a traditional gaming environment with keyboard and mouse controls, and while this setup can be considered convenient, it can also be a hindrance to the relaxing experience players wish to consume visual novel games. Thus, Sea Drive Lackeys wishes to create a controller to cater to those who wish to enjoy visual novels in a more comfortable and ergonomically-friendly environment.

II. Project Description

Visual novel games are often played in a standard gaming environment with keyboard and mouse controls. This takes away the immersive experience for players trying to relax and enjoy their visual novel game. Traditional gaming keeps players in a rigid sitting position for many hours which can be dangerous to the player's overall health.

Some visual novel games do offer custom key configurations to help contribute to an ergonomic environment, but this does not solve the discomfort and health concerns of countless hours spent sitting. Alternatively, players can hook up controllers to their PC games, but they still face similar problems of having to stay in close proximity to their screens and staying seated for prolonged periods of time. Furthermore, visual novel games are enjoyed by a variety of users including gamers, anime fans, story tellers, and art enthusiasts. However, players might not be accustomed to navigating key configurations and custom controllers.

III. Justification

Sitting in front of a computer for long periods of time can cause posture-related injuries such as pain in the back, neck, and shoulder regions; headaches; and eyestrain [1]. For players who enjoy visual novel games, being constrained to a rigid gaming setup with their hands glued to a keyboard and mouse can put them at risk for long term health effects. A sedentary lifestyle can increase the risk of chronic health problems, so it's recommended to be more physically active to improve endurance and energy levels while maintaining bone strength [6]. Thus, it's important to find a way for visual novel gamers to consume their games without being as prone to these problems.

According to a demographic survey of the English Visual Novel Community (EVN) in 2014, the general age range of visual novel game players are from 14 to 30, the largest concentration of players being late 10s and early 20s. Visual novels also appeal more to women with 60% of surveyed identifying themselves as female [3]. Young people are already at risk of computer-related health risks due to the integration of computers in work and school. Given that visual novels only require a limited range of inputs to play, a traditional keyboard and mouse setup presents an unnecessary risk and comfort barrier for those who wish to relax with visual novel games.

Furthermore, visual novel games can also be used as an educational tool to motivate and help students engage with learning. According to the article, "The Educational Potential of Visual Novel Games: Principles for Design. Replaying Japan, Vol. 2.", visual novel games can be designed for higher levels of cognitive complexity. The game must provide a learning environment where students can apply, analyze, and evaluate concepts [2]. Through a compelling narrative, characters, and scenes, students would have the opportunity to gain knowledge from different aspects of the gameplay. For example, students can learn about social issues such as cyberbullying through a visual novel game and can immerse themselves through the player's point of view. Students might project their values and ideas into their character, allowing them to identify with the character and create connections. This process stimulates the player to learn and reflect based on the consequences of their choices and can be influential to their own identity and growth [2]. If a controller is customized

specifically for visual novel games and/or dialogue heavy games, this genre can be further customized to adjust for a school setting. A simplified controller for visual novel games will make learning more engaging and memorable for students.

The controller we are planning to make is a concept our audience is already familiar with but its application will be different from what people expect. According to the study, "An Ergonomic Evaluation of a Hybrid Keyboard and Game Controller", a handheld keyboard controller was designed and tested to measure its discomfort rating. In this study, most participants were hesitant to use this controller, but after testing it out and measuring its comfort levels, users were willing to adjust to the new controller even with its odd design [5]. This leads us to conclude that even if our audience is accustomed to using a traditional keyboard, they can be open-minded to new control schemes.

Inputs (ON/OFF)	Outputs
On/Off button	Turns controller on/off (visual/auditory)
Home Button	Takes player to menu (visual/auditory)
Back Button	Takes player back to previous screen (visual/auditory)
Directional Buttons	Allows player to select an option (visual/auditory)
Ok(confirmation) button	Confirms an option (visual/auditory)
Play button	Auto confirms the dialogue boxes (visual/auditory)
Pause button	Takes the player to the settings/esc menu (visual/auditory)
Forward button	Speeds up the text or cutscene (visual/auditory)
Rewind button	Goes back to previous dialogue (visual/auditory)
Volume/mute buttons	Increases/decreases volume or mutes game (visual/auditory)

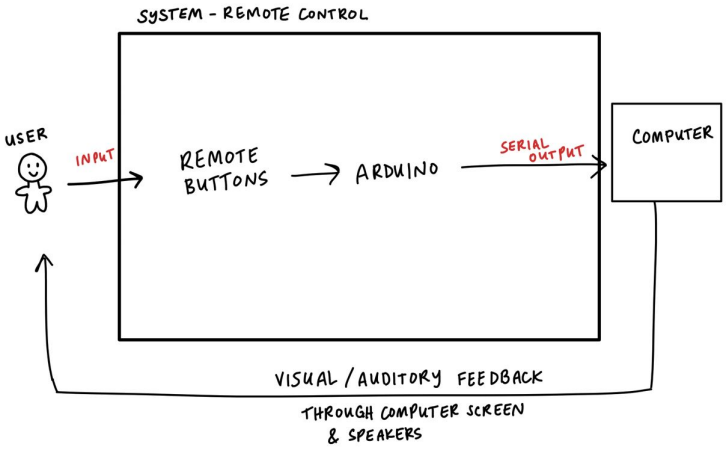

Fig. 1. The system architecture for the remote controller

IV. System Architecture

The current system architecture consists of button inputs. Pressing a button will trigger the Arduino to send a command to the video game through the serial output resulting in the player receiving audio and visual feedback. The table in Fig.1. shows the feedback the play will receive according to the button press.

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