Applying User Experience (UX) Methods to Understand Assisive Technology for Video Gaming

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INTRODUCTION

According to a 2018 survey, an estimated **12.6% of people in the United States** reported a disability (Erickson & von Schrader, 2022).

Assistive technology (AT) is often used by people with disabiities and comes in many forms:
- Modifications to the existing environment
- Modifications to existing technology
- Products specifically designed for people with disabilities

VIDEO GAMING

Video gaming is a popular hobby in the United States
- 179.6 million people in the United States play video games (Insider Intelligence, n.d.).
- 30% of gamers in the United States identify as disabled (Le Ngoc, M. T., 2021)

Gamers with disabilities may encounter a number of obstacles when trying to play games (Porter & Kientz, 2013), including:
- Inability to distinguish important video cues
- Difficulty hearing critical audio
- Inability to adequately move the controller

Because of these barriers, gamers with disabilities may need to adapt settings or features in-game, or employ the use of AT in order to fully enjoy the game.

ASSISTIVE TECHNOLOGY FOR GAMING

Visual impairments
Screen readers and screen magnifiers can accommodate those with impaired eyesight. These softwares can translate written or visual information on a screen to audio for someone with visual impairments to be able to perceive it.

Hearing impairments
Gamers with hearing impairments may use in-game adaptations, such as subtitles, speech to text settings, or screen alerts for auditory messages (Beeston et al., 2018). Additionally, products that translate audio to light pulses or vibrations are available.
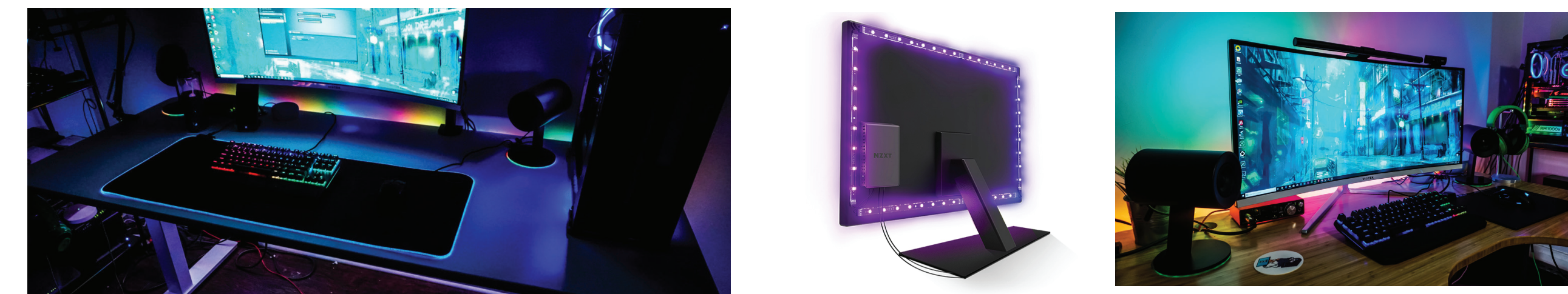
EXAMPLE AT DEVICES FOR HEARING IMPAIRMENTS

Woojer Haptic Vest

KOR-FX Haptic Vest

bHaptics Haptic Armbands

Corsair ICUE LS1000 Smart Lighting Strips

NZXT HUE 2V2 Ambient RGB Lighting Kit

Motor impairments
Assistive gaming technology for people with motor disabilities focus on modifying game controls or control setups to be able to access them with limited mobility.
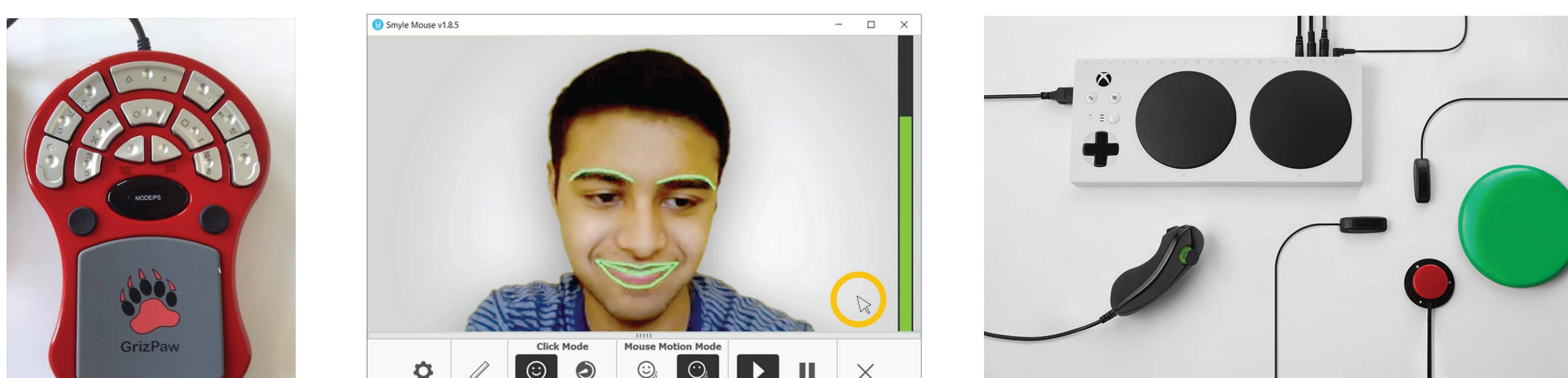
EXAMPLE AT DEVICES FOR MOTOR IMPAIRMENTS

3D Rudder

QuadStick

Sensel Morph

GrizPaw

SmyleMouse

Xbox Adaptive Controller

ASSISTIVE TECHNOLOGY ABANDONMENT

AT has a high abandonment rate by the user which can result in a loss in freedom or independence for the user, monetary loss, or disillusionment.

AT can be abandoned for many reasons, including:
- the technology does not fit the needs of the user
- difficult to integrate into a person's daily life
- difficult to understand how to use

USING UX METHODS TO EVALUATE AT FOR GAMING

Heuristic Evaluation
A heuristic evaluation is a quick method. A heuristic evaluation provides evaluators with a set of principles with which to rate the product (Nielsen & Molich, 1990).

User Interviews
User interviews can provide insight into the opinions and difficulties gamers with disabilities may face with their AT.

Out-of-Box Experience
The Out-of-Box Experience (OOBE) assesses the step-by-step process of a user's experience with a product. The goal is to determine what product impressions the user has, how that changes over time, and what issues may occur in the setup process (Burrows et al., 2016).

User Testing
User testing assesses usability, an attribute that describes how easy a product or system is to use.

Game Satisfaction Scales
Game satisfaction scales can be used to assess satisfaction with the controller. One of the main aspects that influences a player's perception of the game is the quality and fluency of the game controls (Torok et al., 2015).

View "Resources" for additional tips in assessing the UX of AT.

TAKE-AWAYS

- People with disabilities often use assistive technology (AT) to help them with daily tasks, including video gaming.
- If AT does not meet the needs of the user, is not easy to integrate into daily life, or is too confusing to understand how to use, the AT may be abandoned.
- User experience (UX) methods may help identify AT areas of improvement.

REFERENCES & RESOURCES