**POSTER CONTENT**

Section: The ABLE Platform

The ABLE platform focuses on creating social experiences suitable for seniors. ABLE is currently developing a wearable sensor based audio visual interactive experience that responds to users’ movements. ABLE aims to assist older adults, as they age, to stay mobile, active, and engaged with community and the people they love. [6]. Previous feedback from ABLE’s sensor-driven experience shows seniors do not particularly enjoy engaging in activities with absolutely no goal or storyline. This exposes the successes of gamified experiences with seniors and creates an opportunity to leverage this to improve overall health.

Section: BACKGROUND

The problems and concerns of the elderly are quite substantial to the Canadian economy and job markets. The elderly population needs to be able to exercise and stay active regularly in order to maintain their mobility. Social isolation has been proven to lead to reduced health, etc. [3].   
  
- It reportedly costs the government 2 billion dollars every year just for healthcare associated with falls and slips [2].   
- Loss of mobility (ending in falling/slipping) is so frequently occuring that in just one year, 1 in 3 Canadian seniors above the age of 65 will likely fall at least once [2].

Section: ABLE ALLEY: Gesture Based Bowling Game for Seniors

ABLE Alley seeks to apply the user-centred design principles of the ABLE platform to provide an interactive experience that promotes physical activity and social engagement for seniors in assisted living situations (e.g., AMICA).

**What kind of experience?**

Tennis, golfing and bowling are all suitable activities for maintaining good health among seniors [1][4] while providing a traditional gaming experience that is familiar to elderly.

Bowling integrates a social environment that is ideal for the direction of ABLE Alley while golf has proven to increase negative feelings in the elderly [5]. Tennis proposes difficulties with turn-based gameplay which is ideal for the solution because active and turn based video games increase activity and socialization [1].

**Investigating Technology**

Considerations for physical ability are all together more complex because humans (and more so, elderly) come in a plethora of shapes and sizes with even more varying abilities. The elderly specifically bring more complications as they are often aided with peripherals such as wheelchairs, walkers, canes, etc. Technologies focusing on upper body mobility are necessary for the implementation.

Wii-

* The Wii does not offer development coverage to create and ship production quality applications and cannot be adopted by AMICA (or similar residence).

Computer vision -

* Considerations for physical ability introduce difficulties for training a model to recognize types of assisted walking devices/peripherals.
* Custom hardware setups are usually required.

Chromecast -

* Requires the least setup but consistent WiFi.
* Chrome browser supports sensing upper body movements through internet-enabled devices.

Sensor experiences are not considered for this project because the ABLE Project is in progress developing with sensors and curating sensor data with similar objectives.

**Implementation**

Hardware  
Chromecast Phone   
  
Software  
HTML, CSS, JS (Three.js, Google Poly).  
  
The UI will feature simple buttons to alter game state (menu, pause, play) but majority of gameplay will be gesture based (see above image).

Section: IMPACT

Decreased isolation can reduce sympathetic nervous system activity, inflammation, and increase sleep, all of which can accelerate brain and cardiovascular aging [1]. The positive health effects of ABLE Alley can improve the standard of living for the elderly and reduce the healthcare cost of this substantial group [3]. The impact of this study can be better analysed with user studies (interview and observational data) conducted on the prototype or final product.

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