

Peppy Pole: An Anthropomorphic Hiking Companion

Sahar Mavali (29752516), Shanny Lu (57267783), Ursa Maity (18281758)

1 Introduction

Today, trekking and hiking is one of most popular outdoor and recreation activities. Many technologies such as GPS devices, satellite phones, personal locator beams, and smartphones are examples of technologies influencing the experience of hiking and other outdoor recreations[1]. It can be observed that while there are many technologies created and proposed to enhance the hiking experience in terms of navigation, safety, and comfort, there are no signs of using technological devices and interfaces for improving the social and emotional aspects of these outdoor activities.

Research on anthropomorphic interfaces and designing products with lifelike traits suggests that these technologies can influence the emotional connection between the user and the product[2]. However, the potential for using these interfaces in outdoor activities and the effect of the mentioned emotional attachment on the hiking experience has not yet been explored.

To engage hikers in personal experiences stimulated by the physical, emotional and behavioural traits of the hiking pole, we propose to design an anthropomorphic hiking pole that communicates its feelings to the hiker and responds to the hiker's actions. This form of interaction can create and enhance the emotional attachment between the hiker and the hiking pole. We will explore whether this attachment can subsequently encourage the hiker to hike more and make the activity more enjoyable. In order to add lifelike features to our hiking pole, we plan to mostly use existing parts of the hiking pole for different interactions.

2 Background and Motivation

2.1 Introduction to Anthropomorphic Objects

Humans have a natural need for social connections which forms one of the strong motivation factors for the tendency to choose anthropomorphic gadgets[3]. Brown (2010) proposed that numerous anthropomorphic techniques have been increasingly applied nowadays, especially by marketing brands[4]. Beyond that, Mourey (2017) mentioned that the fast development of the Internet of Things has created items that appear to be “alive” through intuitiveness, interaction, responsiveness, and even personality[5]. The fact that individuals are engaged with anthropomorphic products consists with the belongings theory saying that people own a fundamental demand to belong and form social attachments with live being[5].

The manner in which anthropomorphic tendencies actualize differs based on different personal preferences. Previous research indicates that people who suffer chronic loneliness are more likely to assign human like

traits to devices like an alarm clock, air purifier, battery charger, etc[6]. A study including 210 Australian participants, on effects of anthropomorphic tendency on destination attitude and travel intentions indicated that people with high levels of anthropomorphic tendency prefer to humanized destination, travel intentions and view a personified traveling advertisement.[7].

2.2 Lifelike Characteristics in Anthropomorphic Objects

Adding lifelike characteristics to different products can influence the relationship between the user and the product. A study by Burneleit et al (2009) introduced a product prototype called the Impatient Toaster which presented lifelike traits to encourage people to use it more often. They showed that these traits help create an emotional bond between the user and the product[2]. Such an emotional attachment with everyday objects may be investigated further in all aspects of people's lives ranging from indoor activities to outdoor recreation such as hiking or trekking.

Row and Nam (2016) conducted a study on lifelike characteristics in interfaces. They found out that for the interfaces to feel more alive to the users, they must have certain features. Some important examples of these features are lively movement in the interface, behaving like an independent agent and acting autonomously without need for operation, and having an appearance resembling a living organism[8]. Features like these are included in the design of an anthropomorphic interface to make it feel more alive to the user.

2.3 Motivations to Anthropomorphic Hiking Poles

There is not much evidence that the existentialism of a pole or a walking stick has been discussed with regards to anthropomorphism, even though there are many patents owned and papers published on smart hiking poles/canes which are multi-functional. Karsten Hanlin (2020) invented a smart ski pole with integrated speaker that includes a display, a speaker, buttons and a controller all within the pole grip[9]. With a different set of features, Ahmad Alghazi (2018) has invented a multi-functional smart mobility aid device that includes sensors to collect biometric information and perform activity tracking[10]. Several versions of smart white canes for the visually impaired has also been designed and proposed[11][12][13]. These canes use ultrasonic or infrared sensors for recognizing obstacles and inform the user with haptic and/or audio feedback. Although these hiking poles are functional and have smart features, not much focus is directed on addressing how to create an emotional bonding with the hiking pole/cane and how that bonding will affect the user experience.

Anthropomorphism does not necessarily mean assigning superficial characteristics such as a human-like face or body, but rather to create objects with more significant human characteristics like the ability to think and feel emotions[14]. In the light of this definition, we observed there has not been much focus in existing literature on an anthropomorphic hiking pole for establishing emotional connection with the hiker that might improve the social and motivational aspects of the hiking experience. It is expected that this shall be a more intimate experience for the hiker than just a smart assistant on a smartphone, i.e.,

and in the design, the primary focus is on the pole's physically - "poleness".

3 Methodology & Design

We propose to design and build a living interface in the form of a hiking pole, capable of social interaction with the hikers. To design lifelike features of our living hiking pole we try to answer the question of how hiking pole would feel in different situations if it was alive. Unsurprisingly, the living hiking pole feels bored when sitting idle at home and excited when starting a new hike. Like most living creatures, it can feel tired after 'walking' for long and refreshed after a proper rest. The pole's general satisfaction increases with the number of steps it takes and decreases by the hours it sits idle and unused.

The anthropomorphic hiking pole, shall encourage the user to go out for hiking on a frequent basis on the account of "feeling lonely trapped in the closet for a long time". The pole shall express this emotion by mechanically flapping the wrist straps or make an impatient thud using some form of rolling ball mechanism to draw the attention of hikers. It may also indicate with a sliding extension that it is ready for the hike like an alive being.

During the hiking trip, our proposed hiking pole may communicate with the hiker by moving its wrist strap to express its feelings. Different mechanical swaying patterns of the strap shall display happiness, excitement, tiredness, sadness, etc. Likewise, the feelings of the hiker can be conveyed through the force behind hitting the ground with the pole during the hike. When the hiker taps the ground more forcefully it can mean that the hiker is excited and energetic and when he/she hits the ground without much force it can mean that the hiker is tired or in a bad mood. The hiking pole can also respond to these feelings in an appropriate way by sensing the pressure imparted by the pole while tapping the ground during hike. Based on which it shall judge the emotional state of the hiker and in response to this, the wrist strap will flutter or droop down respectively. This will allow for a two-way communication between the hiker and hiking pole and can help build an emotional bonding between the two.

Apart from interacting with hikers by responding their feelings, the anthropomorphic hiking pole can also initiate the communication of sharing feelings. When hikers take it out from the closet, it will express its excitement by swapping its strap quickly. After trekking for a while, the living hiking pole will feel weak and fatigue. It can express its feeling of tiredness by droop down its wrist strap. Meanwhile, the tiredness feeling will be based on a predetermined schedule, so that the hiking pole can assist hikers to make sure that they get enough rest and sleep during the long process of hiking.

The hiking pole shall be equipped with an arduino and an accelerometer for detecting the pressure imparted by the pole while tapping the ground during hike and counting the steps. A motor can move the wrist strap in different patterns for different emotions.

4 Evaluation Strategy

We will conduct a user study based on 10~12 participants to test and evaluate how the living hiking pole affects hiker's emotional attachment during the trekking trip, including whether it increases the frequency of hiking, and whether it improves the pleasure brought by hikes. Furthermore, we can also ask users whether they will choose our proposed hiking pole compared to other wearable technologies to accompany them, whether they would prefer to use the anthropomorphic hiking pole while they are hiking in a group or alone, or even whether they would prefer bringing the living hiking pole to hike with other people. More detailed evaluation plan will be discussed in the next phase.

References

- [1] Blackwell, J., 2015. “Influences of hand-held information and communication technology on risk behavior and the experience of wilderness visitors”.
- [2] Burneleit, E., Hemmert, F., and Wettach, R., 2009. “Living interfaces: the impatient toaster”. pp. 21–22.
- [3] Epley, N., Waytz, A., Akalis, S., and Cacioppo, J. T., 2008. “When we need a human: Motivational determinants of anthropomorphism”. *Social cognition*, **26**(2), pp. 143–155.
- [4] Brown, S., 2010. “Where the wild brands are: Some thoughts on anthropomorphic marketing”. *The Marketing Review*, **10**, 08, pp. 209–224.
- [5] Mourey, J. A., Olson, J. G., and Yoon, C., 2017. “Products as pals: Engaging with anthropomorphic products mitigates the effects of social exclusion”. *Journal of Consumer Research*, **44**(2), pp. 414–431.
- [6] Bartz, J. A., Tchalova, K., and Fenerci, C., 2016. “Reminders of social connection can attenuate anthropomorphism: A replication and extension of epley, akalis, waytz, and cacioppo (2008)”. *Psychological science*, **27**(12), pp. 1644–1650.
- [7] Letheren, K., Martin, B. A., and Jin, H. S., 2017. “Effects of personification and anthropomorphic tendency on destination attitude and travel intentions”. *Tourism Management*, **62**, pp. 65–75.
- [8] Row, Y. K., and Nam, T.-J., 2016. “Understanding lifelike characteristics in interactive product design”. *Archives of Design Research*, **29**, 08, p. 25.
- [9] Hanlin, K., 2020. Smart ski pole and ski pole with integrated speaker, Feb.
- [10] Alghazi, A. A. M. ., 2015. Multi - functional smart mobility aid devices and methods of use, Oct.
- [11] Hung, D. N., Minh-Thanh, V., Minh-Triet, N., Huy, Q. L., and Cuong, V. T., 2018. “Design and implementation of smart cane for visually impaired people”. In 6th International Conference on the Development of Biomedical Engineering in Vietnam (BME6), T. Vo Van, T. A. Nguyen Le, and T. Nguyen Duc, eds., Springer Singapore, pp. 249–254.
- [12] A., N., Sindhuja, M., Asha, G., Subasree, R., and Monisha, S., 2019. “Smart cane navigation for visually impaired”. *International Journal of Innovative Technology and Exploring Engineering*, **8**, 04, pp. 190–192.
- [13] Yohannan, A., and Shyam, S., 2020. Smart cane for blind and visually impaired persons, 05.
- [14] Waytz, A., Heafner, J., and Epley, N., 2014. “The mind in the machine: Anthropomorphism increases trust in an autonomous vehicle”. *Journal of Experimental Social Psychology*, **52**, pp. 113–117.