
What are the Principles that Guide the Use of Tech on Trails?

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Philosophy

Our philosophy of tech on trails is grounded in two premises. First, recreational time spent on trails is a good thing. Second, interactive computing has a role in encouraging, enabling and enhancing time on trails.

Recreational time spent on trails in the outdoors is a good thing. Time on trails in nature temporarily quiets the demands of modern life which can lead to feelings of gladness, humility, and gratitude. Gladness in the sense of a positive sense of well-being. Humility in the sense of feeling awe in the presence of nature. And gratitude for the natural world in which we live. These feelings may increase a sense of stewardship for the environment.

Interactive computing is simply a tool. As such, interactive computing can be used to either enhance or detract from recreational time spent on trails. We believe that carefully designed computing has great potential to enhance, enable, and encourage time spent on trails.

Approach

As researchers in human computer interaction, we have the opportunity to learn principles which guide the use of interactive computing to enhance the recreational trail experience.

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We seek to understand these principles using both inductive and deductive methods.

We inductively form hypotheses about tech on trails by observing people using tech on trails. We observe people using surveys, observation, and by reading related literature. Surveys collect preferences from large diverse sets of people. Observation reveals how people actually use tech on trails. Reading books and articles shows how people describe their use of tech on trails after having had time to reflect on the experience.

Deductive methods involve specific studies designed to refine hypotheses formed by inductive methods and guide future observations. In our work, deductive methods involve building a system, forming hypotheses about how that system will impact the trail experience and then running studies to support or refute the hypotheses.

We chose to start with learning principles of how cell phones impact the hiking experience. We chose cell phones and hiking because hiking is an activity in which many people engage and which has a low barrier to entry.

Also, our university happens to be in a good geographic location to study hiking. We are located at the base of a range of 3,500 m peaks with an extensive trail system. Many students and local residents hike—if only casually. We are also located with 4 hours of 4 major American National Parks (Zion, Arches, Canyonlands and Bryce Canyon) which draw visitors from all over the world who hike—again, if only casually.

Related Efforts

Related efforts include purpose-built applications both in research and industry which bring the cell phone and other technology onto the trail.

Researchers have put forth a multitude of projects which explore tech performing specific roles on trails and in similar contexts. These roles include assessment and instruction [6, 16, 17, 7, 21], safety [1, 31, 29, 8], navigation [25], reflection and motivation [11, 12, 13, 28, 3, 20], social aspects [18, 19, 2, 30], augmentation of human ability [5, 10], sensing [14, 9], notification [15, 24, 22, 23], information [26, 4], and other interesting roles such as avoiding other hikers [27].

Commercial products also fill some of these roles. Some products monitor and track activity such as fitness trackers¹, and the more outdoor/adventure-oriented Xensr². GPS products are now familiar and widely used by individuals on the trails. Other products help with safety and communication, such as goTenna³ and GPS devices which transmit an individual's location and other data⁴. Some products create new roles and experiences, such as the adventure camera⁵.

Although most of these cited works represent one-off projects, taken as a whole they help to frame an understanding of some of the ways in which tech on trails can enhance, enable, and encourage outdoor experiences. We have been working to study these and other similar projects and pairing this with data from our own work in order to develop a space in which to situate this existing work and which can be further explored in future work.

¹<https://www.fitbit.com/home>, <https://buy.garmin.com/en-US/US/c/IntoSports-c571-p1.html>

²<http://xensr.com/>

³<https://gotenna.com/>

⁴<https://www.findmespot.com/en/index.php?cid=101>, <https://explore.garmin.com/en-US/inreach/>

⁵<https://gopro.com/>, https://www.tomtom.com/en_us/action-camera/action-camera/

Future Plans

In pursuit of our understanding of principles that guide tech on trails, we intend to continue exploring existing technology and its use by individuals in the outdoors, mainly through observation, which will serve to augment understanding we have already gained through nationwide surveys involving both quantitative and qualitative inquiry.

An important part of our model is to define the dimensions of a space in which tech on trails projects can be situated and which can be explored through further work, as described above. We also intend to publish and maintain an online annotated bibliography, similar to that maintained by Jansen and Dragicevic about work involving physicalization (physical visualizations)⁶. We intend this as a benefit to the community at large, for motivating and situating new work, as well as to allow individuals to discover others who are working in this area.

We also intend to build our own systems which sample the model space. These systems will serve to explore interesting roles, explore less-populated areas of the space for tech on trails, and validate and refine our model and the principles it encompasses.

At the moment we are working on a system for connecting a day hiking trail user with family and friends at home. This system helps the family at friends at home answer the question “when are you getting home?” while requiring minimal effort from the hikers. This system may enhance and enable recreational trail use by simplifying logistics associated with a day hike.

Ultimately our goal is to contribute to an overall model of the role of tech on trails. We hope that this model will contribute

⁶<http://dataphys.org/wiki/Bibliography>

to a more general understanding of interactive computing in outdoor recreation.

Workshop Activities

We are interested in facilitating a group process to gather, organize and store papers to form an extensive bibliography of published work related to tech on trails.

We are also interested in leading a group effort to consider a different model of tech on trails. In our research thus far, we have identified an initial model in which participants in outdoor recreation activities use (or choose not to use) technology in order to connect across the gap between the natural and civilized worlds, maintain a gap between civilized and natural worlds while on the trail, or to make the world on the trail feel more like home by ignoring the gap between the worlds. Most current research and commercial systems simply operate only within the natural world of the trail, with little consideration of the gap between the two worlds. We would be interested in (designing/hosting/facilitating) an ideation (and rough prototyping?) activity wherein different groups consider each of these approaches to this gap and what types of roles tech might play in bridging, maintaining, or even ignoring the gap.

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