# An Autoethnographic Analysis of Nike+GPS

SI 688: Fundamentals of Human Behavior - Fall 2011
Gierad Laput (glaput@umich.edu)

## INTRODUCTION

This paper provides an overview of the Nike+GPS mobile application and an account of a personal experience in using the system. I will provide a critique and analysis of the application in lieu of this experience, using the concepts of divided attention and multi-tasking, motivation, and the threads of experience. Finally, I provide a brief discussion on the limitations and generalizations of the analysis as well opportunities where the analysis can provide further value.

## THE NIKE+GPS SYSTEM

In a nutshell, Nike+GPS is a mobile application intended for users who are interested in running and walking exercises. Its primary goal is to track personal statistics such as distance, speed, and location, while synchronizing this data to a user's online Nike account. It is also intended as a motivational tool for users who have specific exercise goals. Originally, Nike designed a sensor to communicate with a user's iPod or iPhone to track exercise statistics. As technology improved, however, Nike released the Nike+GPS application that tracks the same data using GPS, effectively eliminating the need for the sensor.

Nike+GPS's workflow is very simple. First, a user selects a workout goal from a list of options (Fig. 1 & Fig. 3), such as the type of workout, running terrain, and music options. Once complete, the user can begin the workout and the application automatically tracks data.

## EXPERIENCE WITH NIKE+GPS

### Before the Workout

With headphones secured, I warmed-up and walked casually towards a pre-planned trail. During this short walk, I configured Nike+GPS to start a new workout by setting a distance goal of three miles. Once I reached the start of the trail, I leapt for my first stride, tapped the large 'Play' button from the interface (Fig. 4), and officially began my run. To avoid accidental interactions with the application during the run, I enabled its "Lock" feature (Fig. 5) and safely placed it inside my pocket.

### During the Run

Aside from running, I simultaneously listened to a podcast. I kept the auxiliary control from the headphones within reach in case I needed to adjust the volume or pause the workout. I performed these while also constantly scanning the running trail and my surroundings for debris, potholes, or incoming vehicles. Nike+GPS, on the other hand, constantly tracked data and quietly performed its role behind the scenes. A couple of minutes into my run, I monitored progress by unlocking the phone, which brought the app into the foreground. Although this felt a bit distracting and inconvenient, knowing about my progress outweighed these nuances for the moment. I placed the phone to back my pocket and continued with the exercise. Knowing that I've reached a certain milestone, Nike+GPS lowered the podcast volume and momentarily took over the audio to say "Halfway point." It then faded out and resumed playing the podcast. At some point during the run, however, the ring of an incoming call took over the audio and interrupted my exercise. I waited patiently for the ring to end. Feeling disrupted from the incident, I shrugged it off and continued with my exercise. I continued to trudge through the run. Not long after, I heard Nike+GPS proclaim: "You're Almost at Your Goal!" Upon hearing this, I felt a momentary burst of energy and I rushed as fast as I can towards the end of the trail. Moments later, Nike+GPS poured out an enthusiastic cheer of "Congratulations! You have reached your goal of 3 miles."

### After the Run

After I reached my goal, I concluded the exercise by pressing the "End Workout" button, and anxiously waited for the system to calculate the final statistics of the run. Once completed, the system displayed a counter proudly showing the total number of miles I've accumulated (Fig. 9) and a history of all my exercises (Fig. 10). I felt a sense of pride and achievement as I glanced over my exercise history. After a few moments, I heard an enthusiastic cheer: "Hi this is Dirk Nowitzki, and you've just ran more miles this week than last week. Way to go!" I admit that I chuckled when I heard this remark. Deep inside, however, I felt special for being applauded by an athlete that I

particularly admired. Those few transient seconds ignited excitement and strengthened my resolve to faithfully commit to my exercises. I then savored my exercise by reviewing a map detailing the route of my completed run (Fig 11 & Fig. 12). Afterwards, I tapped a few buttons in Nike+GPS and tagged my exercise with a "happy face" (Fig. 8). Finally, I tapped the "share" button and posted the completed workout to my Facebook account (Fig. 7).

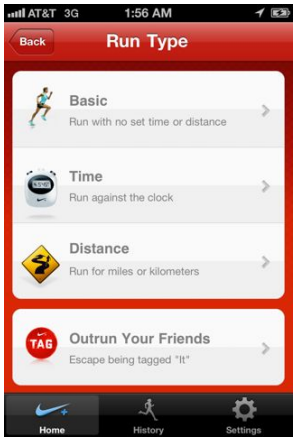


Figure 1 – Run types and goals.

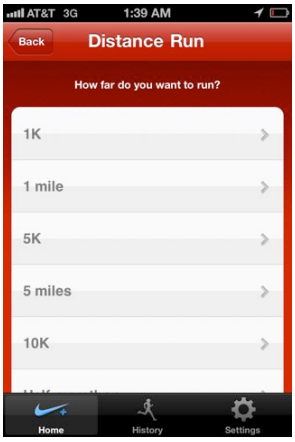


Figure 2 – Screen to set distance goals.

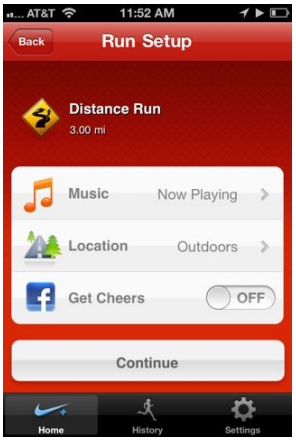


Figure 3 – Screen to configure a run.

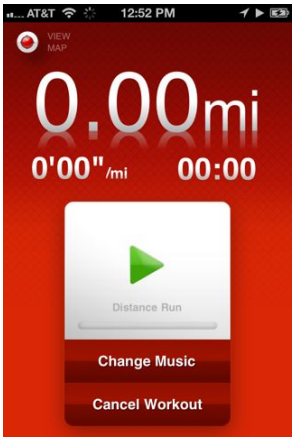


Figure 4 – Pressing the play button begins run.

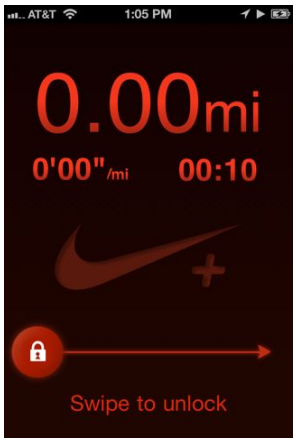


Figure 5 – The lock screen.


Figure 6 – Summary of completed workout.

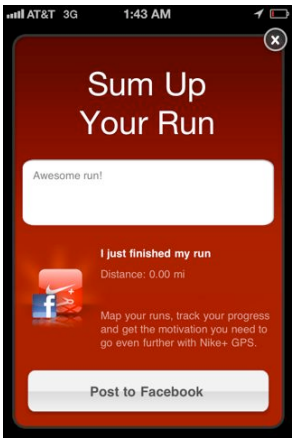


Figure 7 – Posting completed run to Facebook.

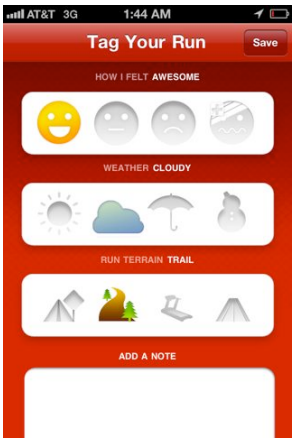


Figure 8 – Tagging a run.


Figure 9 – Main home screen showing accumulated stats

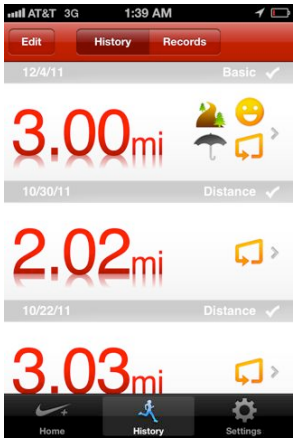


Figure 10 – The activity log

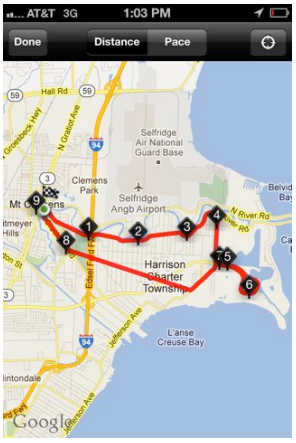


Figure 11 – Route map visualizing distance information.

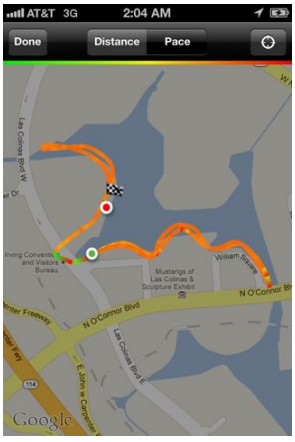


Figure 12 – Route map visualizing pace information.

## DIVIDED ATTENTION AND MULTI-TASKING

The concept of divided attention and multi-tasking is fundamental to the uniqueness of how Nike+GPS is used in context of running. Under common sense understanding, a user performing two or more tasks divides his attention to effectively support them. Each task demands a certain level of mental effort, and performance is affected relative to the interplay between the tasks. A user's ability to successfully divide his attention between two tasks is affected by various factors (Wickens, 2004 p. 149-154), and among them I will elaborate more on task structure**.**

*Task structure* refers to the property of a task with respect to what it is trying to accomplish. Some tasks, such as listening to the radio while driving a car, are inherently compatible which allows multi-tasking without degrading performance. Thus, these tasks can be effectively interpreted as using *separate* resources. The *multiple resource theory* suggests that different means on how humans process information behave as if they are supported by multiple resources (Navon & Gopher, 1979).

To elaborate further, a model exists which classifies resources into four dimensions, each of them having two levels of independent resources (Wickens, 2004). They are:

- *Modalities*: Auditory (tones, synthesized voice) vs. Visual (maps)
- *Codes***:** Spatial (imaging) vs. Verbal (listening to speech)
- *Stages***:** Perceptual & Cognitive (searching, rehearsing) vs. Response (manipulating)
- *Visual Channels***:** Focal (interpreting symbols) vs. Ambient (visual perception)

The main idea to keep in mind is that tasks using different resources *are easier to perform together.*

### Supporting Multi-tasking

Besides the physical commitment involved, running also requires constantly monitoring the environment for potential hazards. With this as a backdrop, it is imperative that an application attempting to augment the running experience keep these constraints in mind. Nike+GPS addresses these constraints in several ways.

*Keen use of audio***.** Nike+GPS's passive audio interface does not impede with the task of running. Even though I am focused on the mechanics of running, which is primarily visual, I can successfully multi-task because the application uses the *auditory* resource for providing status updates and feedback.

*Good integration with music and audio content*. With Nike+GPS, I could listen to a podcast without feeling disrupted whenever it provides status updates. As mentioned, Nike+GPS slowly lowered the volume of the podcast before it took over the audio, and then faded-out before resuming the podcast. Note that both the podcast and Nike+GPS compete for the same auditory resource. Moreover, both have similar information content (i.e. spoken words), which could have lead to confusion. Through smart control of audio transitions, however, Nike+GPS effectively managed multi-tasking.

*Lock feature directs focus on running***.** It is rare for applications to "disable" UI interactions when it is used. Nike+GPS, however, deviates from this norm by providing a "lock" feature to prevent accidental interaction during an exercise. This is a good example of *task management* because disabling the UI essentially de-prioritizes Nike+GPS into a secondary task, and gives up its demand of resources to the primary task of running.

On the other hand, there were instances where Nike+GPS missed a few key aspects of multi-tasking within the scope of the exercise. For instance, it was only possible to acquire real-time feedback by physically interacting with the phone**.** As a result, I had to grab the phone and take attention away from the run. Interacting with the phone in this manner competed with the visual resource allocated to focus on running. Perhaps Nike+GPS could be improved by mapping the headphone controls to a function within the app that calls real-time feedback. In addition, Nike+GPS did not properly prioritize the incoming phone call, which caused the application to stop and eventually impeded my focus on the exercise. This is probably a feature of the phone that is outside Nike+GPS's control. Needless to say, this disruption could have been dampened in a smarter way.

Although my experience with Nike+GPS is not perfect, I think the application's interaction appropriately facilitates multi-tasking. It does this by assuming the role of a *secondary* task, subservient to the more important tasks directly involved with the exercise.

## MOTIVATION AND INCENTIVES

Running is a difficult activity and that is why motivation is an important aspect in the design of Nike+GPS. Under a common sense understanding, motivation is a process that moves, influences, or sustains certain human behaviors. Although there are multiple perspectives in the study of motivation (Darwin 1959, and Pittman, 1998), this section addresses motivation from the perspective of the incentive theory. It describes motivation as a process that "pulls" behavior towards a certain state that reduces pain and increases pleasure, and it is distinguished by two types: intrinsic and extrinsic motivation. Intrinsic motivation leads one to do something for personal gratification, such as deriving pleasure from an activity or an alignment with one's values, while extrinsic motivation drives behavior with a focus for an external reward, such as money or power (Sansone & Harackiewicz, 2000). In the context of running, for example, intrinsic motivation may lead one to derive pleasure from completing the exercise, while extrinsic motivation may lead one to exercise based on monetary rewards gained from winning a "weight loss" contest.

In addition, there are tools that can be used to cultivate motivation in running. One example is *goal-setting*, which is based on the idea that a clearly defined end-state drives behavior since accomplishing it becomes a reward in itself. For instance, a user is more likely to accomplish a goal-oriented task such as "run one mile in ten minutes," as opposed to "run outside." The process of *activity logs*, in addition, elicits motivation by making the user reflect on trends from a history of activity information (a task comparable to journal writing) and using the information to drive progress towards a particular state. Activity logs are seen in various forms, including food journals, weight journals, and attendance sheets. In the context of running, motivation helps a runner complete an exercise. Moreover, motivation sustains progress and solidifies commitment towards achieving long-term goals.

### Motivation for Achieving Exercise Goals

#### *Activity Logs*

Running is a demanding endeavor and this is why Nike+GPS incorporates features to motivate a runner. One way it facilitates motivation is through an activity log (Fig. 10). Nike+GPS excels in this area by taking the burden of collecting information away from the user. At its core, Nike+GPS creates a “digital journal” of the running experience by *automatically* tracking exercise data. The trade-off with automation, however, is accountability. Since Nike+GPS logs data on my behalf, it must perform this accurately and reliably to establish a level of trust. In my specific case, I took Nike+GPS through a series of “tests” and trusted it because it met the level of accuracy that was good enough to suit my needs. By establishing trust and alleviating the mundane task of recording data, Nike+GPS facilitates intrinsic motivation through activity logs.

#### *Goal-Setting*

As mentioned in the previous section, setting goals facilitates motivation because it creates a drive to reach a clearly defined end state. In the case of Nike+GPS, setting goals allows a user to focus his exercise towards achieving them. At the beginning of each exercise in Nike+GPS, I can set running goals such as a target time, a target distance, or by beating previous accomplishments. The application also makes pre-defined goals (e.g. “20-minute run,” or “half-marathon”) easily accessible by rendering them as prominent buttons (Fig. 2). In retrospect, not only does goal-setting facilitate motivation, it also provides structure to the workout, which makes the running experience more engaging, rewarding, and pleasurable.

#### *From Solitary to Social*

Building on top of activity logs and goal-setting, Nike+GPS also supports motivation by facilitating social interaction. Through this, the activity of running is transformed from solitary to social; a transformation that carries with it the motivational effects that arise in a social environment. These social factors can serve as extrinsic motivators for running. As outlined in my experience, broadcasting my completed runs through Facebook (Fig. 7) provides a communication channel for my friends to provide feedback about my exercise. In terms of motivation, this is important in a couple of ways. First, I receive feedback such as casual “likes,” running advice, or silly comments, which are almost always encouraging. Second, the stream of posts I generate from broadcasting my completed exercises sparks curiosity among my friends. As a result, they tend to inquire about my running activities. This interaction provides an opportunity to discuss my goals (e.g. training to complete a half-marathon) in a public environment, which indirectly creates a form of social pressure, ultimately solidifying my resolve to achieve them. In addition, broadcasting my exercises plays a strong role in improving performance because anticipating a potential audience at the end of my exercise motivates me to not only complete the run, but to also strive for quality.

## EXPERIENCE AND MEANING MAKING

An analysis of Nike+GPS is incomplete without investigating how it facilitates a unified experience within the broader context of running. There are several perspectives that provide ways for people to describe experience in a manner that greatly enhances their awareness of it. McCarthy & Wright refer to these perspectives as *threads of experience* (McCarthy & Wright, 2004). The four threads of experience include 1) the sensual, 2) the emotional, 3) the compositional, and 4) the spatio-temporal threads, and this paper will focus mainly on the compositional and spatio-temporal threads of experience. The *compositional thread* describes experience as the relationship between the parts and the whole of an experience. It is concerned about framing—the process of marking beginnings and ends to an experience—to resolve arbitrariness, allowing structure and meaning to emerge in an experience. For instance, declaring "study period" and "break period" frames these activities into two experiences with two different meanings. On the other hand, the *spatio-temporal* thread describes one's experience using the language of space and time. For example, time may feel "shortened" for a person immersed in an interactive game, while the experience of space may feel "crowded" for a person engaged in a busy chat room. The general idea to keep in mind is that the threads of experience are not components of experience, but rather *they are means to richly describe one's experience* from different perspectives.

### Meaning Making with Nike+GPS

#### *Providing Structure to the Experience*

Nike+GPS richly supports the framing aspect of the compositional thread by designing each run as a "workout session." This session serves as the unit of experience within Nike+GPS. The application allows the user to mark the beginning of the session by setting specific goals, and it initiates the "running experience" through a single press of a button (Fig. 1 & Fig. 4). The end-state of the goal, on the other hand, creates the boundaries which mark the end of the experience. Depending on the time, distance, or achievement goals, Nike+GPS automatically concludes the running session once these goals are reached. The support for framing within Nike+GPS enhances the meaning-making of one's exercise by providing structure and reducing arbitrariness to the running experience. Once the running experience is framed, Nike+GPS amplifies meaning-making by allowing the user to create meaningful associations within the bounded experience, through features such as celebrating accomplishments at the end of an exercise using the voices of famous athletes. From my experience, the cheer from Dirk Nowitzki made me feel special, and it definitely made my running experience more meaningful and memorable. Another way in which Nike+GPS creates meaningful associations is through tagging (Fig. 8). Using pre-defined tags, meaning is enhanced by allowing the user to select buttons that "mark" attributes about the experience (i.e. whether the experience was "happy" or "sad", whether the conditions were "sunny, snowy, or rainy", or whether the terrain was "indoor, roadside, or on a trail"). Tagging enhances meaning by associating value to the exercise through personal reflection.

#### *The Experience of Time and Place*

The spatio-temporal thread is richly supported in Nike+GPS. At its core, Nike+GPS tracks time and location information, and it uses them to support multiple features throughout the application.

*Awareness of Time*. As one tries to achieve a workout, a person is periodically reminded (as defined by the user) about the "total time" of the run. In my account, these demarcations allow me to experience time in an "efficient" manner, which is important especially if I have set time goals for a particular exercise. In addition, I also experience time as "laid-back" when I zone-out and continue listening to music throughout the run. In this context, Nike+GPS provides me with two different ways to experience time in the course of single exercise.

*The Place and the Self*. Nike+GPS enhances the experience of space as it records location information throughout the entire run. As it performs this during the run, it provides me with a special sense of relationship between the place and myself; I form a sense of connectedness. Moreover, the ability to look back on my running routes makes each experience very meaningful (Fig. 11 & Fig. 12). As a person who fancies running at every new place I come by, these maps also serve as meaningful mementos or souvenirs. From these maps in Nike+GPS, I can mark my "presence" in cities like Chicago, Dallas, New York, or even Cebu, Philippines through running. This provides an avenue to immerse myself to the place, which makes the activity elaborately meaningful. In addition, the notion that I can potentially show these mementos to my friends and family through Nike+GPS provides a reflective value that adds more meaning to the experience.

## DISCUSSION

In this analysis, I used the concepts of multiple resource theory, motivation, and the threads of experience to shed light on my running experience with Nike+GPS. However, there are a couple of limitations in which my analysis may not generalize at a broader scope.

### Limitations

Running is a particularly nuanced exercise and the setup I mentioned in my experience may not appropriately relate to other runners with different backgrounds, preferences, and skill levels. For instance, my analysis of the multiple resource theory for Nike+GPS assumes the use of headphones. However, this may not particularly apply to those who prefer not to use them. In this case, the idea of multi-tasking within the running exercise would not fully apply. In addition, the account of my running experience illustrates an outdoor activity. However, running indoors (as supported by treadmills or other equipment) would be a totally different experience. Although Nike+GPS functions indoors, it does not collect location information if used in this manner. Thus, my analysis of the spatio-temporal thread may not particularly apply in this case. In addition, people have different levels of comfort when it comes to carrying or strapping a cellphone while in the course of an exercise. Thus, people who are not comfortable running in this manner may not fully appreciate the running experience as supported by Nike+GPS.

Furthermore, although the congratulatory remarks I received from the voice of Dirk Nowitzki made the culmination of my run very meaningful, this experience may not necessarily transfer to a broader audience because people's affinity towards others are very subjective. Using Dirk Nowitzki as an example, his encouraging remarks may have no impact to a person who is not familiar with him, or worse, it may have negative impact on someone who abhors Nowitzki or the sports team he is affiliated with.

### Generalizations and Potential Value

Despite these limitations, there are aspects of this analysis that would generalize to a broader audience. The motivational effects of goal-setting and activity-logging generalizes across people who need motivation or want to sustain the motivation to run. This can range from people who want to run as part of a health regimen, those who want to run as a casual exercise, and to those who want to train for running events. In each of these cases, motivation is key in moving towards a desired target. Goal-setting provides a means to focus one's energy towards reaching a clearly defined end-state, while activity logging creates opportunities for reflection on one's achievements and progress towards a desired outcome. In addition, the account of my experience and analysis outlined here would provide value to individuals who desire want to get more motivation for running, or to those who find it difficult to enjoy the exercise. It will also provide value to avid runners who want to fully immerse and create more meaning to their running but have not come across a tool that engages one in such an experience.

## CONCLUSION

This paper describes a personal account of using Nike+GPS in the context of running, and discusses certain aspects of those interactions based on the concepts of divided attention, motivation, and the threads of experience. Overall, Nike+GPS provides a good framework for multi-tasking with respect to the demands of running. In addition, it uses goal-setting, activity logs, and social interaction as tools to cultivate motivation in running. It facilitates meaning-making within the running experience through its strong support for framing, achievement celebration, and tagging. Finally, Nike+GPS enhances the sense of time within the running experience through periodic "time updates" and music integration, while providing opportunity to reflect on the experience of space through route maps.

## REFERENCES


Wickens, C. D., Lee, J. D., Liu, Y., & Gordon Becker, S. E. 2004. Ch. 6, Cognition. In Introduction to Human Factors Engineering, 2 ed. Pearson Education, Inc. Upper Saddle River, NJ. pp. 149-154.

Navon, D. and Gopher, D. (1979). "On the economy of the human processing system", Psychological Review, 86, 214-253.

Darwin, C. (1959). "On the origin of species by means of natural selection, or the preservation of favoured races in the struggle for life", London: John Murray.

Pittman, T. (1998). Motivation. In D. Gilbert, S. Fiske, & G. Lindzey (Eds.), "The handbook of social psychology" (Vol.I, 4th ed., pp549—590). NewYork:Oxford University Press.

Sansone, C., & Harackiewicz, J. M. (2ooo). "Controversies and new directions — Is it déjâ vu all over again?" In C. Sansone & J. M. Harackiewicz (Eds.), "Intrinsic and extrinsic motivation: The search for optimal motivation and performance" (pp. 443—453). San Diego: Academic Press.

McCarthy, J. and Wright, P. 2004. "Chapter 4: The Threads of Experience" In Technology as Experience. MIT Press.