

**2016 Idea Challenge Application**

1. **Project Name:** Shrazard – a mountain bike hazard tracking and notification system
2. **Team Members:**

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| **Name** | **Student E-mail Address** | **Phone Number** | **Year in School** | **Major** | **Primary Contact** |
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1. **Advisor(s)/Mentor(s): (Optional)**

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| N/A | N/A | N/A |
| N/A | N/A | N/A |

1. **Questions:**

**Describe your idea/project.**

The goal of this project is to create an app and wearable tech combination that will reduce the amount of trail-related (hazards, poor conditions, difficulty level) injuries in the mountain biking community. First, the app will provide users with trail-view: a feature that provides a detailed trail-level view of the entire trail to get a sense of the difficulty level before riding the trail. This will be implemented by continuously taking GPS correlated photos of the trail and stitching them together so the user can scroll through the entire trail. Second, a Bluetooth-connected smart wristband will provide real-time trail hazard warning and point of interest alerts to users while riding the trail without requiring the user to take his eyes off the trail. The smart wristband will respond to geo-tagged hazards and points of interest along the trail. Three different type of tagging will be available:

1. *Hazard tagging*: A user that is *currently riding* on the trail and discovers a hazard can take a geo-tagged photo that will be available to all users via trail-view and smart wristband warning.
2. *POI tagging*: A user can tag points of interest in trail-view mode that are only visible on his/her trail-view. The user does *not need to be physically on the trails* to tag POI’s via trail-view. Given that trail-view is a sequence of GPS-correlated images, the app will know the exact GPS coordinates of a POI that is identified through trail-view.
3. *Group tagging*: A group trail ride can be arranged by tagging a meeting point on trail-view that will be visible to all member of the group. If a group member arrives late, his trail-view will show the real-time location of the other members of the group so he/she can catch up.

The smart wristband will provide haptic feedback (vibrations) to alert a rider when he/she is approaching a GPS-tagged location. These vibrations will vary based on type of tag.

**What type of issue/problem does your idea/project address?**

31% of mountain biking injuries occur due to poor trail conditions including unknown hazards. Unpredictable terrain and unknown hazards will always present a safety concern no matter a rider’s skill level. In general, mountain bikers put their phones in their backpacks or pocket while riding, so they cannot be seen, heard, or felt. If the rider mounted their phone to their handle bars, it would be extremely dangerous to take your eyes off the trail to look at your phone. Our smart wristband solves these problems by alerting the rider by haptic feedback instead of requiring the rider to look at his/her phone.

**What is unique about the way your idea/project addresses this problem?**

This will be the first application that provides a trail-level view of trails and provides a method to warn riders in real-time of hazards. This will leverage work by Biketastic (geo-tagging points of interest) and Strava (GPS mapped trails).

**Who will benefit from your idea/project?**

Mountain bikers of all skill levels will benefit from the trail awareness this project will provide. It will help to reduce the number of injuries due to unknown trail conditions and could even be extended to other adventure sports such as snowboarding and skiing.

**Where are you in the design or development of this idea/project?**

We are in the initial planning stages of this project: We have developed a rough project plan to take this to a working prototype over the course of 2-3 months. We have identified the necessary development tools. We have also developed a series of use cases, and are working towards a high level system design.

* 1. **Will you work on pursuing your idea/project after you graduate? Yes No Maybe (Check boxes then pop up below questions depending what they answer on the check box)**

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* + 1. **If maybe, how might your idea/project be sustained after you graduate?**

If we decide not to pursue this after graduation, we plan to open source this software and allow the community to contribute to it. We would also be prepared to work on this in our free time, and mentor those that take it on fully.

**Why is this idea/project important to you**

This project is important to us because it can reduce injuries in mountain biking (and possibly other adventure sports).