

Metal Crusaders Engineering Notebook 2021

Team 5293

January - Today 2021

Contents

1 The Prompt

PROMPT: “Science, technology, engineering, and math (STEM) have always been the catalyst for innovation that moves our world forward. As our societies continue to evolve and become more inclusive and connected, our sports - and the activities that make us physically and mentally strong - must change along with us. This means redefining where and how we move and play. We actively play and move for ourselves, but also with and as a community to attain optimum health. This means inventing and innovating places, ways, sports, tools, and concepts so people of all abilities and skill levels can thrive through active play and movement.

Identify a problem or opportunity and design a solution to help people (or a community of people) keep, regain, or achieve optimum physical and/or mental health and fitness through active play or movement.”

1.1 Submission Information

- two contact emails (must be mentors)
- time zone
- project title
- project described in brief phrase (10-word limit)
- executive summary
 1. Describe the problem/opportunity the team is focusing on (200-word limit).
 2. Describe how the team proposes to solve the problem/opportunity (200-word limit).
 3. What technology the team used (or planning to use) in the design or solution development? (This does not have to be a comprehensive list but will help align any specific technical expertise a judge may have to the judging GROUP)(100-word limit).

**Think of the executive summary as a very brief overview; not all of the challenge needs to be figured out! It's expected that teams are going to expand upon the solution between submission deadline and interview.*

DUE MARCH 4TH

2 Brainstorming Ideas

2.1 Finding a Problem

(already done ideas)

- Ring Fit, Fidget Cube

(our ideas)

- Working out (obesity, heart disease, lung disease, diabetes)
- Wearable fitness technology
 - A game (maybe kind of like Pokemon Go?)
 - * A game that has motivation behind it
 - Health, body image, or something in the game
 - Wearable fitness technology
- **ADHD**
 - Focus puzzles; each piece that snaps together causes a vibration, extends focus on the puzzle; improves hand eye coordination
 - Fitness aspect?
 - Device that blocks out background noise (but like not exactly headphones) using white noise (like AirPods)
 - * Noise-blocking earset that uses sensors to detect when background is above 70dB;; fitness aspect?
- **OCD**
 - All about sensors: touch
 - Device for sports: when your hands are no longer making contact with (for example) the basketball, sensor beeps in the ear to refocus the player
 - Touch sensor beeps when contact is lost > 3 seconds?
- **Sleep deprivation**
 - An alarm clock?
- **Motivation**
- **Anxiety**
- **Eating disorders**
- **Paranoia**
- **Drug/alcohol abuse**
- **Loneliness** - **Winning Idea**
 - Interact with people through some sort of fitness game ?
 - Have an ability to chat and socialize or be competitive if you want
 - Mainly focus on having exercises that can easily be done at home without any equipment; just some space
 - Probably try to limit chat functions so toxicity is limited
 - Play with others towards a goal (defeating a boss, completing a minigame together (requires teamwork))
 - * Could put a spin on a sport and use those concepts for the minigames
 - * For loneliness I was thinking like a app or like a machine that lets you watch movies and you can see your friends too?
 - * For the games we should have communities/teams within and maybe have weekly team goals to aim for, I'm thinking of how to build a sense of community through a game w/o having direct online friends

- ~~Color blindness~~
- Sitting for too long/sedentary lifestyles
- Blindness
 - Detecting any moving persons/objects within 5 ft to minimize dangerous situations/collisions
- Deafness
- People who are physically unable to carry/hold stuff
 - Carrier robot thing; daily companion for people with disabilities
 - Maybe speech/sensor recognition/detection to really limit contact
- ~~Waking up~~
- Hygiene (maybe something that limits physical contact)
 - Sensors that detect how far someone is? Could be a pandemic-related device
 - Detecting heat signatures? (can we even get a thermal imaging camera?) 6 feet away or closer
 - Environment-friendly disposable gloves or something
- Physical therapy and mental health for patients in nursing homes
 - Create a robot that helps elders do easy workouts and encourages them