



2020 Wearable Technologies Workshop Challenge Request

Challenge Title: The Smart bag

Organization Name: VINSS LLC

Team Assignments Available: 2

Summary of the Challenge and Team Project

Background:

The VINSS bag is a unisex bag/diaper bag designed exclusively to help women and men who struggle every day with normal use of their handbag or diaper bag when attempting to view the contents at a low light level. It integrates today's wearable technology solutions into a high-end, unique fashion product and leverages the demand for a unique product. It is surmised that the bag would also be useful for long-duration space missions, providing a convenient way for astronauts or travelers to easily view the contents of bags in low light-level conditions.

The handbag features self-adjusting LED lights which transition inside of the bag to balance or adjust the brightness level relative to the interior lighting conditions, thus allowing users to clearly see the contents. A timer shuts off the lights after a set period of time for convenience. The bag has a USB driver for charging the bag and other electronic devices such as a mobile phone.

The VINSS unisex bag contains a large pocket made of a washable material that can be removed from the bag for cleaning. When used as diaper bag, this pocket also has three internal small pockets, one for diapers, another pocket for wipes, and the third pocket for the baby bottle. The bottle compartment can also be connected to the charger to keep the bottle warm. The pocket for the wipes is also connected to the charger to keep the wipes warm.

Assistance is needed in efficiently integrating the LED lights, light-level detecting sensors, on/off switch, and USB driver into the handbag.

Problem statement:

We need help with integrating the various electrical/electronic components into the bag to ensure that the system is user-friendly and operates safely, meeting consumer UL safety standards.

- The bag system shall have a battery capable of charging a modern smartphone at least two times.
- One version of the bag system shall have a heating system for bottle and wipes warming.
- One version of the bag system shall have a cooling system for food storage.
- The bag system shall identify room lighting and have internal lights respond appropriately.
- The bag system shall connect via Bluetooth and be accessible via phone app.
- The bag shall adhere to all ISO and safety standards.

Important design considerations (These can be discussed, and possibly negotiated, in more detail after the Team has been assigned):

The electrical/electronic components need to be integrated so that they do not interfere with normal use of the unisex bag/diaper bag, and the bag must meet consumer UL safety standards.

Major components of the bag are:

1. LED lights: This bag has an internal lightning system that is embedded inside the inner lining of the bag.
2. Sensors: It has an array of sensors that detects the light levels in the bag. When the bag is open, the sensors check the amount of ambient light inside. If it is below the predetermined level, the sensors will turn on the internal lighting system.
3. USB Charger: Connected to the outer lining which can be used to power external electronic devices.
4. Switch ON_OFF: The bag can be controlled by this switch.
5. Bottle warmer/cooler: Located inside the bag, the bottle can be kept warm or cold in an inner pocket that connects to the electronic device.
6. Wipes heater: Located inside the bag, there is a warmer for the wipes.
7. The product is designed for the U.S. and Canada, needs to support 110V +- 10% 60Hz, and must pass UL standards for both U.S. and Canada.
8. Lighting App to manage the color and brightness of the bag from a smart phone
9. Customization of the bag: The bag can be customized to feature the initials/logo of the purchaser, family or company.

What and/or resources can be provided to each Team? (The details of the payment arrangements must be negotiated with the Team.)

We will provide a prototype and buy the electrical/electronic components needed for the integration project. I will be available to travel if the team is located outside of the Houston region.

Deliverables (the final product you expect the Team to provide – such as a report, garment, user evaluation, ...):

A fully functional prototype of the unisex bag/diaper bag and a report that provides documentation that I can use for manufacturing of the product. The goals and deliverables for this system follow advancements in current technology. Here, researchers should strive to make advancements in wearable technologies through sensors and electronics. Component requirements and deliverables are derived from global requirements.

How will the results be used?

A working prototype for proof-of-concept design to be used to finalize my patent and used to specify requirements for a manufacturer to produce the product in large quantities. The success of this product will contribute significantly to my company and will become the centerpiece product line.

What deliverables (if any) do you want transferred to you at the end of the project?

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