

SMART UMBRELLA

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ABSTRACT: The Smart Umbrella will be the most awaited product in the near future. It incorporates a wide variety of features. Unlike the classic type of umbrella, the Smart Umbrella has multifarious characteristics. The classic type of umbrellas just helps the user from rain and sunlight, no other facilities are provided. Existing smart umbrellas have various features such as weather forecast and anti-theft. In this paper, we propose new Smart Umbrella that guides the way to the destination on rainy days, collaborating with smartphone, the other aspects include GPS Unit, Torch Facility, Solar unit, Fan, Power Bank, Electric Shock, USB Entrance. The sun can be a harmful entity that can actually harm and even kill people. Long term exposure to the sun's harmful UV rays has been shown to cause skin cancer or at the very least provide the outdoorsman with a very painful sun burn. Sun shielding umbrellas are unavoidable commodity in these environments. This fact provides us with a customer need that the Smart Umbrella can fulfil.

Keywords: Rain, Smartphone

1. INTRODUCTION

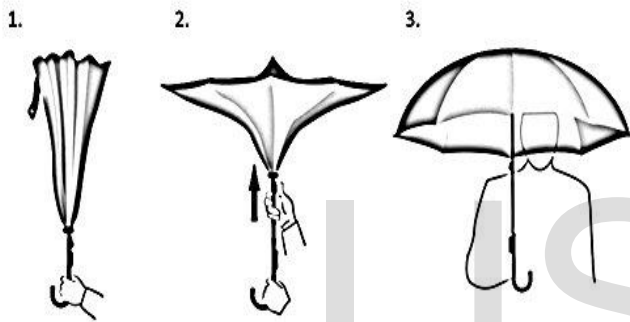
An umbrella or parasol made using the technique of folding canopy accommodated with wooden or metal ribs, which is held on a wooden, metal, or plastic pole. It is constructed to safe guard people against rain or sunlight. The word umbrella is commonly used while protecting oneself from rain, with parasol which helps to from a protection layer from sun light, any how it is used interchangeably. The materials used to make canopy; are not water repellant. Fabric or Flexible Plastic maybe used for Umbrella canopies. We keep on getting older, and umbrellas keep looking the damn same. The same metal pole gets rustier and the same canopy of nylon gets more torn. The same handle with the button that doesn't work. And all we want do is shield our bodies from the rain. The umbrellas we grew up with look almost identical to the umbrellas we use to this day, and that's a shame. Umbrella had become an unavoidable part of our life because of its frequent necessity, the umbrella has gone through some innovation. Sure, they're smaller than before, but

no one has modified the design of the umbrella. The query now is: Why? Why must we tolerate this? Why must we pressurize ourselves whenever it's going to rain, knowing we'll have to drag around a wet umbrella? Why must be concern about whether our umbrellas will work properly this time? And, more importantly, how no one has rectified these faults? Like coats, hats, mittens, even boots, the style of the umbrella has stayed relatively consistent. No one, in the year 2019, yet has a device that can shield them from the rain like an umbrella, and look the least bit interesting. Instead, year after year we are left with the same prototype, which many people are already pretty peeved with, given that umbrellas are cumbersome and annoying to haul around all day. The problem faced by most of us is handling our wet umbrella, forgetting to take our umbrella when we need it the most. Is it possible to imagine that an umbrella will safeguard the welfare of the stakeholders? Here we introduce Smart Umbrella, the best solution for all our problems. Not only a solution, but also a boon for every person. It acts as a power bank, shock generator, torch, and can charge our gadgets using our umbrella. The smartest umbrella

available in the market.

1. MODEL FEATURES

a)Reverse Facility: This facility provides the clean handling of an umbrella during rainy season. This does not create any water spillage in the surroundings like the existing umbrellas. It's very difficult to handle the water falling on the umbrella, with the reverse facility this problem is resolved.



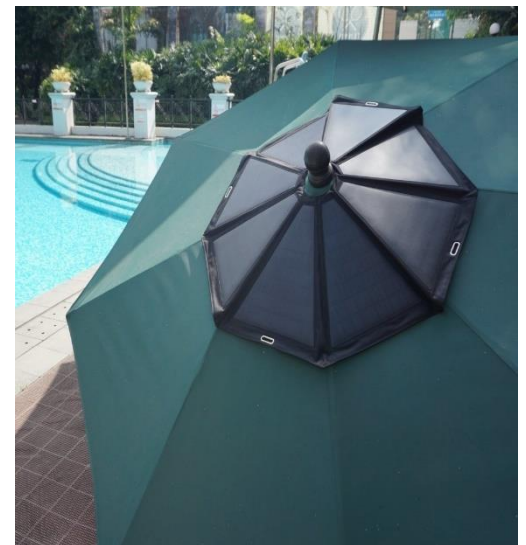
b)Fan : This facility provides a cooling effect to the user. This feature is very useful during the summer season.



a) Power Bank Unit : This is one of the most useful feature. This feature helps the user to charge their gadgets.



b)Torch Facility : This facility guides the user during the absence of light.



e)GPS : The signals from a **GPS** can give accurate and concise information that is used to estimate speed, time, and exact location of objects or humans.

FEATURES AT A GLANCE



f)Solar Panel : This provides energy to the umbrella.

3.METHODOLOGY

The techniques we proposed would overcome the drawbacks of the current system and also we have suggested best solutions for the same. We are also trying to develop the best in class umbrella with smartest features. Many new innovations are included to make it a unique product.

3.1 FAN INSTALLATIONS

For enhancing the innovations we have included a fan. A built-in electric cooling fan with mesh protective cover, is provided to keep the user cool. Accurate motor is to be used to create

better output .In this product the motor has the following specifications:

- Low voltage - the motors need to run off the batteries if there is no sunlight for the photovoltaic cells.
- Low amperage - the motors need to run on as less than 1.0 amp.
- Lightweight - the motors together need to be less than 1 pound in order to keep the overall weight of the unit down.
- High torque - need to have a torque output higher than 2560 oz.
- Efficiency - need to use the most modern way of converting electrical to mechanical power.
- Precise - the motors need to be able to be moved to a fixed position or rotate a certain number of times to move the unit to a certain position.
- Controllable – all the controllers should be controlled by the controller used in the unit.
- Weather resistant - the motors must be able to operate in sandy and watery conditions in order to function outside at the beach.

3.2 GPS MODULE

With a bunch of salient features and benefits under this umbrella, it is most suitable for identifying, locating and managing commercially used vehicles and other assets on a map in real-time. This system works with software which can be accessed from a mobile. Using an application in the mobile, it will alert you to take it on days with rain prediction, and it will remind you before you leave it behind. If you lose the umbrella, you can find it using the app and the umbrella's built-in GPS. Installing module must occupy the following objectives

- Plug & Go GPS receiver module
- Compact design :25mm x 25mm x 2.5mm
- Two antenna outlets with auto-detect switch
- Simple UART interface
- Ultra low power consumption $\approx 27\text{mA}$ 3.0V
- High sensitivity -147dBm
- Position accuracy: 3m CEP (50%), 7m CEP (90%) without SA (horizontal).

3.3 BACKUP REQUIREMENTS

Current generated by the solar panel on charging is transferred to the umbrella's handle where it is stored in

rechargeable batteries. In addition to that, it can charge mobile or any USB device directly with the help of a USB port. The umbrella charger has good aesthetics. It is not heavy nor huge will that annoy its users. In this way, it is an eco-friendly innovation that can be easily marketable.

The installing rechargeable batteries have following specifications

7.2V nominal voltage - must have enough voltage to be able to power the added components in the project.

- Low cost - need to cost less than \$50.00 with shipping included
- Large availability - need to be readily available to be able to find replacements.
- Lightweight - The batteries will be considered in the total project weight so they need to be less than 1 pound.
- Rechargeable - Minimum cycle life of 300 cycles.
- Small size - should fit in 1.25 ID pole or compact
- High power output –can produce 10 watts per hour output.
- Medium output duration - maintain normal operation for a minimum of 3 hours

3.4 LIGHTING MODULE

The most innovative multi-use torch umbrella will light up your walks while keeping you dry. With an LED torch set within your umbrella handle there is no need of a torch to enlighten our through. The handle is easily rotated to light the path ahead whilst resting on your shoulder. The lighting module has the following specifications:

- Low voltage - the lights need to run off the batteries during night time usage. Running voltage less than or equal to 7.4 volts.
- Low amperage - the lighting system needs to run on as less than 0.5 amps in order make sure the system will not drain the battery too quickly.
- Low cost - the lighting system needs to cost less than \$30.00.
- Lightweight - the lighting system all together needs to be less than 0.25 pound in order to keep the overall weight of the unit down.

- Efficiency - needs to use less power so that the battery last several hours with just the lighting system activated.
- Controllable - needs to be controlled by the controller .

4. CONCLUSION

Normally umbrellas are of greater demand in rainy season which give protection from heavy rain and storm. Whereas, our product can be used on all seasons as it is equipped with many salient features.

There are many more advantages in using this umbrella that is, a single umbrella can be used for fulfilling variety of purposes. One of its unique functions include Solar Panel unit. The embedded solar panels in the umbrella can charge a 12V battery when sun is available. The battery can power any appliance (under 400W) with the help of an inverter. The solar panel units are to provide enough power to the battery to either charge the battery while in use or to prolong its longevity. It also comprises of a shock, According to the umbrella having a self-defense function, the electric shock stick can be provided in the handle so that the umbrella can be used as a self-defense weapon and is easy to operate and carry. It is mainly focused to provide safety for women.

A battery charger-when the solar panels are exposed to the sun, light is converted to electrical energy to charge a rechargeable battery. The battery supplies power to one or more USB ports. Fan- umbrella with fan protects from the harmful UV rays and keep the users cool at the same time with the built-in battery operated fan. It helps to keep us safe from rain as well as harmful sun rays. It also has a power bank which is ready to use and also facilitates outdoor use. Unlike all umbrellas it is of all season use. It is also provided with a reflector-control the spread of the light when it hits the exterior of the umbrella and bestow protection during night by allowing wider light for vision. Depending on the shape and size of the reflector, the light will either be wider or narrower before it spills out from the umbrella.

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