



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

# IJRSET

International Journal of Innovative Research in  
**SCIENCE | ENGINEERING | TECHNOLOGY**

# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 12, Issue 13, April 2023

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

9940 572 462

6381 907 438

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# Multi-Purpose Solar Powered Umbrella Integrated with cooling fan and Power bank

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**ABSTRACT:** This project studies the detrimental effects of UV radiation outdoor workers and existing protective measures taken in their work sites. All the information about the above elements were collected from secondary sources. Analyzing all the aspects, the paper proposes an innovative product concept to mitigate the hardships of outdoor workers. The concept is expected to provide better sun protection than existing equipment. It is titled as "Multipurpose solar powered umbrella integrated with cooling fan and power bank". Furthermore; the handle along with the shaft can be removed to convert the umbrella into a hat umbrella. Hence, the term dual purpose is used in the title. This paper provides a competent concept which has the potential to assuage the hardships of outdoor workers. The population of world increasing day by day and due to this the demand of urban cities also becoming high in smarter way as compare to it before. As we are living in 4th generation of industrial revolution which caters human need in smarter way. The need of future cities are now of smart umbrella which can open up by its own using sensory signal during rain on large opening spaces of cities such as car parking's, pedestrians, outside buildings, restaurant and also for individual need with option of connectivity with Wi-Fi, USB and Music App for enjoying rain along beautification factors for cities.

**KEYWORDS:** Solar power, charging facilities, hat umbrella, uv protection.

## I. 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 repellent. 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 and 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.

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## II. RELATED WORK

**Solarumbrella:** The Solarumbrella is a solar-powered umbrella that has a 24-inch fan, four USB ports, and a 10,000 mAh power bank. It also has LED lights for night use.

**Coolibar Sun Umbrella:** The Coolibar Sun Umbrella is a UV-protective umbrella that has a built-in fan, with three speed settings, to keep you cool in the sun. It also has a tilt feature to provide shade from the sun.

**Sunnytech Solar Umbrella:** The Sunnytech Solar Umbrella is a solar-powered umbrella that has a 10,000 mAh power bank, two USB ports, and a 24 LED light system. It also has a built-in cooling fan.

**KIKILIVE Solar Umbrella:** The KIKILIVE Solar Umbrella is a solar-powered umbrella that has a 10,000 mAh power bank, two USB ports, and a built-in cooling fan. It also has a tilt feature and LED lights for night use.

## III. METHODOLOGY

Multi-Purpose Solar Powered Umbrella Integrated with Cooling fan and Power bank is a concept that expected to provide better sun protection than existing equipment. It provide an integrated mobile phone charging facility within the umbrella, so as to use solar power to charge the power bank installed inside the handle. Therefore, the need for carrying additional power bank would be eliminated. A USB mobile charger along with a battery inside the handle at the end of the shaft. The solar panel provides 20 electricity to the fan as well as to the battery. The shaft of the umbrella can be removed and fixed on the head of the user with help of the adjustable head band. In this stage, electricity from the solar panel is sent to the fan alone

## IV. EXPERIMENTAL RESULTS

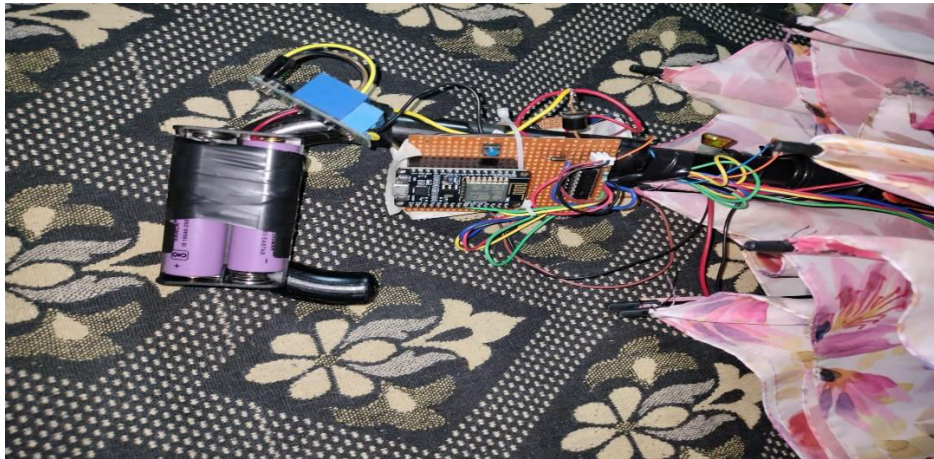
- The Solarumbrella is a solar-powered umbrella showed here :



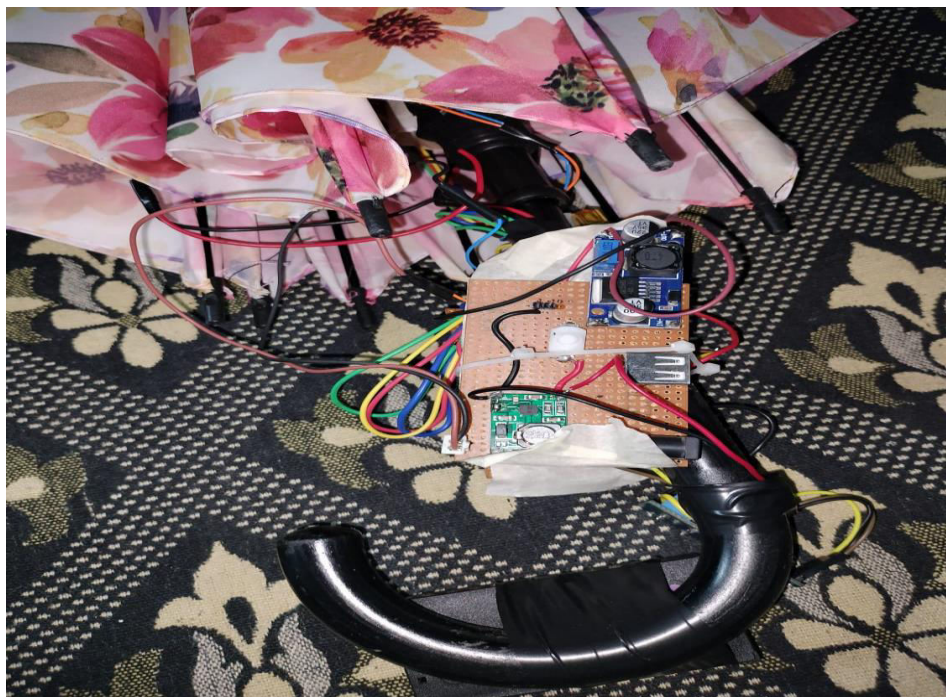
(a)



- Connection of power bank, USB ports and LED lights :



(b)



(c)

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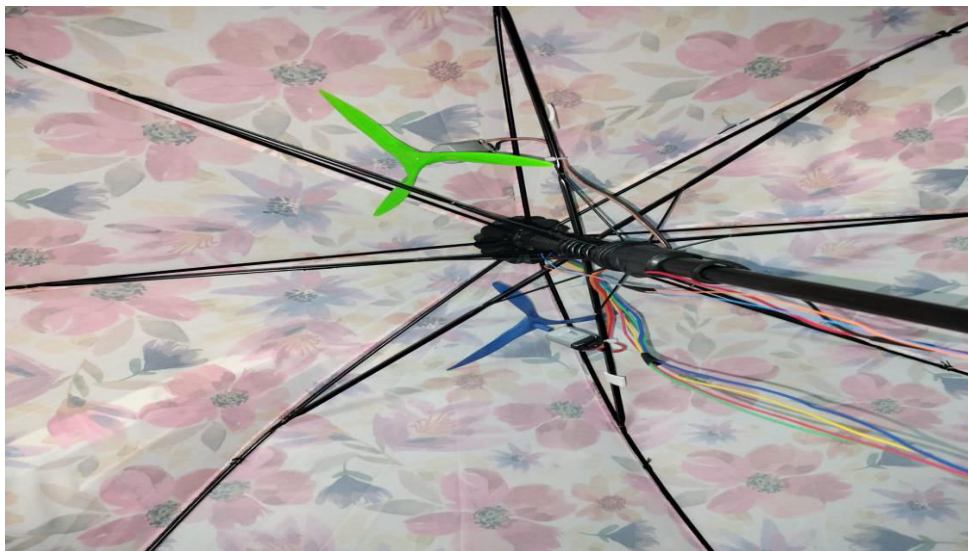
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- The overall hardware connection inside the Umbrella :



(d)

- Umbrella is a UV-protective umbrella that has a built-in fan:



(e)



- The overall view of this project :



(f)

#### V. CONCLUSION

In conclusion, the adverse effects of over exposure to sunlight, including skin cancer, sunburn, heat stroke and heat stress, are hiking rapidly now adays. Outdoor workers are more prone to these hazards as they spend more time under sun. It is evident that, workers need to drink water and take rest under shade frequently in between their work to avoid heat stress. Apparently, an easiest way to get shade from sunlight would be a portable personal equipment. However, existing personal gears, used by workers, are inadequate to resolve all the present issues. The reason can be attributed to lack of easiness to use these devices while working. Thus, it is imperative to develop a new equipment, like the concept discussed above, to alleviate the hardships of outdoor workers. It could be expected that the proposed design of “Dual-purpose solar powered umbrella integrated with cooling fan and power bank” would assist the workers in fighting heat related miseries.

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