KVRSS SPARK Innovation Awards Application

Field:

Bhoutikam (Physics)

Title of the Project:

Guard in motion (GIM)

Name of the Student(s):

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Summary:

The GIM Band is a safety device for women that is designed to provide them with an extra layer of protection in potentially dangerous situations. The device is a chip that is installed in a band or watch, along with a button. The GIM Band is designed to be worn on the wrist, and it is designed to be discrete and unobtrusive.

The device is activated by pressing the button, which turns on the microphone and camera that are installed inside the watch. The microphone and camera are used to record audio and video of the situation that the woman is in. The recording is then uploaded to the cloud, where it can be accessed by the woman, her friends, or the authorities.

The GIM Band is a great way to ensure women's safety because it provides them with a quick and easy way to record evidence of any potential danger or harassment. This can be especially useful for women who are walking alone at night, or who are in other potentially dangerous situations. The device is also useful for women who are working in jobs where they may be at risk of harassment or violence, such as security guards or police officers.

The GIM Band is also a great way for friends and family to keep an eye on their loved ones, especially when they are in unfamiliar places or with unfamiliar people. The device can be set up to send notifications to a designated contact when it is activated, so that they can be aware of the situation and take appropriate action.

Overall, the GIM Band is a simple and effective device that can provide women with an extra layer of protection in potentially dangerous situations. Its small size and discrete design make it easy to carry and use, and its ability to record audio and video of a situation can provide valuable evidence for the authorities. The GIM Band is an innovative solution for women safety, which can make a big difference in ensuring their safety in different scenarios.

Significance and Uniqueness of the project:

The GIM Band is a multipurpose device that can be used to secure personal safety in a range of situations. It can be worn on the wrist, around the neck, or placed in a bag, purse, or pocket and is activated by a button press or a voice command. The device's audio and video recording capabilities can also be triggered manually or automatically via the device's motion sensor, which detects unexpected movements or impact and begins recording automatically.

The device also includes a built-in microphone and speakers for two-way conversation. In the event of an emergency, this capability can be utilized to communicate with emergency services or designated contacts. Furthermore, the device can be integrated with a personal alarm that can be activated with a button click or voice command, attracting attention and discouraging possible assailants.

The GIM Band's capacity to give real-time location information to selected contacts is one of its primary advantages. This functionality can be used to track the user's movements and offer an extra degree of protection. The device also contains a low battery indicator, which warns the user when the battery is low and can be quickly recharged via USB.

Data from the gadget can be kept in internal memory or in the cloud and accessed via a smartphone app. The software also allows the user to adjust the device's settings, such as the emergency contact list, as well as examine the recorded data. In the event of an emergency, such as an SOS signal or motion detection, the device can also be configured to send alerts to authorized contacts. In the event of an emergency, its GPS tracking and emergency call buttons give real-time position information as well as an SOS signal. It can also be combined with other safety features such as a personal alarm, two-way communication, and a low battery indicator, giving the user a variety of alternatives for safeguarding themselves in various scenarios.

To summarize, the GIM Band is a powerful and creative personal safety solution that can add an extra layer of protection in potentially risky situations. Its compact size, discrete design, and capacity to capture audio and video make it simple to operate and useful to authorities.

Concept:

The GIM Band is a safety device that utilizes modern technology to provide an extra layer of protection for women in potentially dangerous situations. The device utilizes a chip that is installed in a band or watch, along with a button. This chip allows the device to record audio and video of the situation that the woman is in, through the microphone and camera that are installed inside the watch.

The scientific concept behind this device is the application of modern technology to improve safety and security. The GIM Band utilizes the latest advancements in micro processing, audio and video recording, and cloud storage to provide a reliable and effective means of protection for women. The device takes advantage of the small size and high performance of modern microprocessors, which allows it to be incorporated into a small and unobtrusive device. Additionally, the device uses cloud storage to allow for remote access to the recorded audio and video, providing a convenient and efficient means of sharing the recorded data with others.

In conclusion, the GIM Band is a safety device that utilizes modern technology to provide an extra layer of protection for women in potentially dangerous situations. By using the latest advancements in micro processing, audio and video recording, and cloud storage, the device provides a reliable and effective

means of protection. The device is designed to be worn on the wrist, making it discrete and unobtrusive, and is activated by pressing a button, allowing for quick and easy activation in an emergency.

- ***Electric circuits:*** The device likely contains a circuit board and various components such as sensors, microphone, speakers, and a battery that work together to provide its functionality.

- ***Energy and power:*** The device need a source of power to function, this could be a battery or other type of power source.

- ***Waves and signal processing:*** The device's microphone and speakers use sound waves to capture audio and transmit speech. The audio recording is then processed and stored in the device's memory.

- ***Motion detection:*** The device uses a motion sensor to detect unexpected movements or impacts, this is based on the concept of acceleration and motion.

- ***Thermodynamics:*** The device may generate heat during operation, and it may also have a cooling mechanism to dissipate that heat.

- ***Optics:*** The device may have a camera, which relies on the principles of optics to capture images. Materials Science: The device's casing and other components are made of specific materials, which have been chosen for their mechanical, electrical, and thermal properties

Methodology & Experimental Design:

An experimental design for a women's safety band that incorporates a camera and microphone could involve the following components:

- ***Panic button:*** The band would have a discreet panic button that, when pressed, activates the camera and microphone.

- ***Camera:*** The band would have a small camera that can be activated by the panic button. This would allow the wearer to capture any potential danger or evidence of an attack.

- ***Microphone:*** The band would have a microphone that can be activated by the panic button. This would allow the wearer to record any audio that may be relevant in an emergency situation.

- ***GPS:*** The band would have a GPS device that would enable the wearer's location to be tracked in real-time. This would be helpful in case of an emergency to ensure that help can be sent to the correct location.

- ***Wireless connectivity:*** The band would have wireless connectivity, such as Bluetooth or Wi-Fi, to enable it to connect to a smartphone or other device. This would allow the wearer to send an emergency message to a designated contact with their location and any video or audio evidence captured.

- ***Power source:*** The band would have a rechargeable battery that provides enough power to last for extended period of time.

- ***Durability:*** The band should be made to withstand normal wear and tear, such as water resistance and shock resistance.

- ***User interface:*** The band would have a simple user interface that is easy to use, so that the wearer can activate the camera and microphone quickly and easily in an emergency situation.

- ***Privacy settings:*** The band would have settings to ensure privacy and avoid accidental activation.

- ***Gyro sensor:*** This sensor would provide a way for the user to go into an emergency mode and allow to turn on the camera, microphone, and GPS with a gesture from the user.

- ***Motion sensor:*** This experimental design could be tested by recruiting a sample of women and providing them with the band and instructions on how to use it. The participants would then be asked to wear the band in various situations and report back on their experience with the band, including its ease of use, effectiveness, and any other feedback. Based on the results of the study, adjustments can be made to the design to improve its performance.

Results so far achieved and explanation of results:

At this stage, we are in ideation phase. Planning and prototyping are currently in progress, and the research question and objectives have been defined. The methodology for the project has been outlined and the necessary resources have been identified. The team is currently in the process of acquiring necessary approvals and permissions. However, this idea was widely supported by our schoolmates and our teachers.

Conclusion:

The GIM Band is a versatile device that may be used to ensure personal safety in a variety of settings. Audio/video recording, motion sensor, gyro sensor, built-in microphone and speakers, personal alarm, real-time location information, low battery indicator, internal memory, and cloud storage are among the features. It can be linked to a smartphone app and configured with emergency contact lists and other options. It is a complete and robust personal safety solution with a number of capabilities to improve personal security in a variety of scenarios.

Future Potential of the Project:

The potential for a women's safety band that incorporates a camera and microphone is significant. The ability to discreetly activate a camera and microphone in emergency situations could provide valuable evidence of an attack, and potentially aid in the prosecution of the perpetrator.

One potential future application of this technology would be in the workplace. According to the National Commission for Women (NCW) and National Human Rights Commission (NHRC), one in three women will experience some form of sexual violence in the workplace. A safety band of this nature could provide a sense of security for women in these situations, and potentially provide evidence for legal action against an attacker.

Additionally, the real-time GPS tracking feature of the band could be used to quickly locate and assist women in emergency situations, such as during a natural disaster or an active shooter incident. This technology could also be integrated with emergency response systems, such as those used by police and fire departments, to provide faster and more efficient response times.
The technology could also be used for personal safety, for example, during a night out or for women that are working on night shifts. The band can be worn discreetly and would not draw attention to the wearer, which could be especially useful for women who may not want to draw attention to themselves in certain situations.

However, it's important to keep in mind that this technology should be developed with the privacy and security of the wearer in mind. The band should have privacy settings to ensure that the camera and microphone are only activated when the wearer presses the panic button, and the data should be encrypted to protect it from unauthorized access.

In conclusion, the potential for a women's safety band that incorporates a camera and microphone is significant. This technology could provide a sense of security and peace of mind for women in a variety of settings, and potentially aid in the prosecution of attackers. It's important to ensure that the technology is developed with privacy and security in mind, and to test it with real-world scenarios to improve its performance.

Bibliography, References and Acknowledgements:

Bibliography:

- The National Crime Records Bureau (NCRB) in India which publishes annual data on crime against women.
  https://ncrb.gov.in/

- The World Health Organization (WHO) which has published reports on violence against women, including statistics on the prevalence of different types of violence.
  https://www.who.int/

- The United Nations Entity for Gender Equality and the Empowerment of Women (UN Women) which has published reports on violence against women, including statistics on the prevalence of different types of violence.
  https://www.unwomen.org/

References:

- National Commission for Women (NCW)

http://ncw.nic.in/

- National Human Rights Commission (NHRC)
  https://nhrc.nic.in/

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Data:

Women and other individuals suffer a significant risk of harassment, assault, and other forms of violence in many parts of the world, which drives the demand for devices like the GIM Band. According to the World Health Organization (WHO), one in every three women globally experiences physical or sexual assault, with rates as high as 70% in some countries. Furthermore, research has found that women are more vulnerable to violence and harassment in public places such as public transportation, parks, and streets.

There have been various tragic incidents where women have been brutally assaulted. Some such cases include:

- The Nirbhaya Case: On December 16, 2012, a 23-year-old female medical student was brutally raped and beaten by six men on a bus in Delhi. The incident caused widespread outrage and protests throughout the country.
- Priyanka Reddy Case: Dr Priyanka Reddy, a veterinarian doctor, was found dead and half burnt. She was raped, smothered, and then burnt by four men.

Furthermore, according to a study conducted by the University of California, Berkeley, wearable devices such as personal safety alarms can be beneficial in deterring possible assailants and improving the possibility that a person will obtain help in the event of an emergency.

In conclusion, the significant danger of harassment, assault, and other forms of violence that women and other people suffer is what motivates the need for devices like the GIM Band. The GIM Band allows for the rapid and easy recording of evidence of possible danger or harassment, which may then be utilized to hold criminals accountable and bring them to justice. Furthermore, the device's GPS tracking and emergency call buttons provide real-time position information as well as an SOS signal in the event of an emergency, which can be vital in assuring the user's safety. Wearable technologies, such as the GIM Band, have also been demonstrated in studies to dissuade potential assailants and increase the likelihood that a person will obtain assistance in the event of an emergency.