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UVITA - A SMART UV MONITORING SOLUTION

"Real-Time UV Monitoring for Sun Safety and Public Health"

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INTRODUCTION

UV radiation poses significant health risks, including skin damage and cancer, yet public awareness remains low. Traditional UV monitoring relies on weather reports, which lack real-time personalization. UVita addresses this gap by combining IoT hardware (UV-sensor-equipped phone cases) with a mobile app to provide instant, actionable UV index data. This innovation empowers users to adopt proactive sun protection measures, bridging the gap between technology and public health.

METHODS

Hardware:

- Sensors: ML8511 (UV) and TSL2561 (light) capture real-time environmental data.
- Microcontroller: Arduino Pro Mini processes sensor inputs.
- Communication: HC-05 Bluetooth module transmits data to smartphones.

Software:

- App Development: Android Studio (Kotlin/Java) or Flutter.
- Backend: Firebase for data storage and user management.
- Algorithm: C++ on Arduino converts sensor readings to UV index.

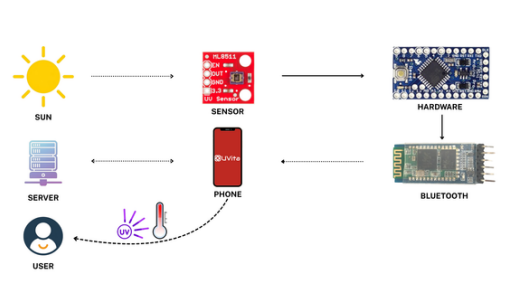

Fig. 1. Operating mechanism of the platform.

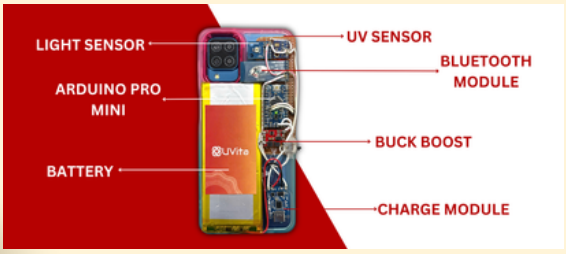

Fig. 2. Demonstration product.

User Interface:

- Displays real-time UV index with color-coded risk levels (scale 0–11).
- Sends alerts and protection tips (e.g., sunscreen reminders).

RESULTS

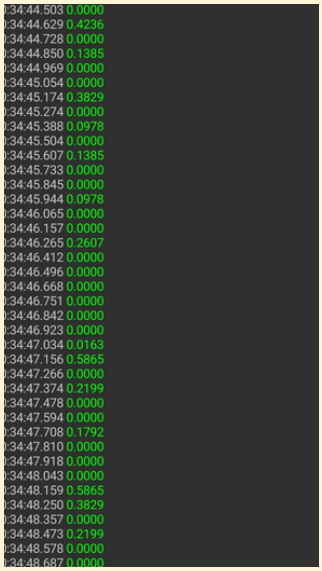

Fig. 3. The raw dataset was collected via UV sensor.

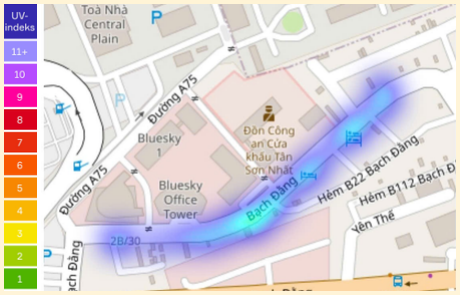

Fig. 4. The map displays real-time UV levels at the user's location.

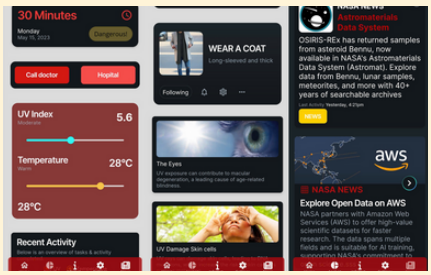

Fig. 5. The UVIta app interface provides users with UV index, temperature, and offers UV protection measures in real time.

Fig. 7. Provide the dataset collected from users to NASA.

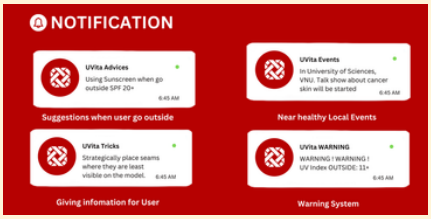

Fig. 6. UVIta's notification interface on the phone screen.

CONCLUSION

- Creating UV sensor phone case - Transfer data to a mobile app by bluetooth.
- Developing new UV index map on UVIta.
- Providing health solutions, Personalize UV data for users and Personalize UV data for users and construct a ground-level UV measurement dataset.

FUTURE WORK

- Improving the phone case to be user - friendly.
- Build a sales system based on advice for users.
- Using Machine learning to analyze reponse data.
- The map shows the lacations of health centers.
- Supporting health by providing indicators.

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DATA SOURCES & REFERENCES

PHO BROTH'S PROJECT ON NASA SPACE APP CHALLENGE 2024