

# Utilizing the New Generation of Wearable Devices in a Combined Diabetes Diary Application



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## Introduction

Modern wearable technologies can support patients with different diseases and chronic conditions. As earlier documented by our combined smartphone/smartwatch Diabetes Diary application [1], use of such system can be beneficial for patients with diabetes.

Due to a new generation of smartwatches, we are developed a redesigned version on the smartwatch platform Android Wear [2]. The presented application helps to track the blood glucose, carbohydrates intake, insulin doses and physical activities in more ways.

## Methods and Design

### Self-recorded Blood Glucose, Insulin and Carbohydrate

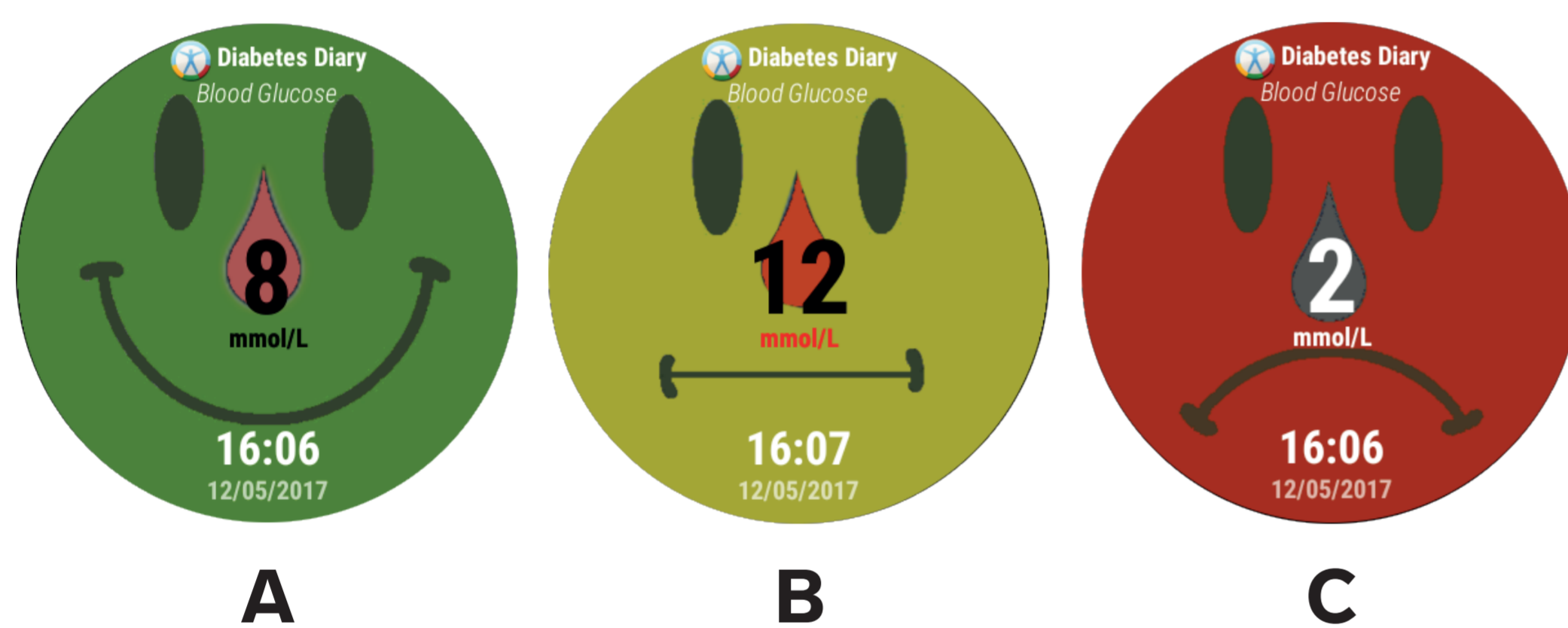


Figure 1. A-C: Blood glucose registration, showing the latest value fetched from the Diabetes Diary mobile application with different faces.

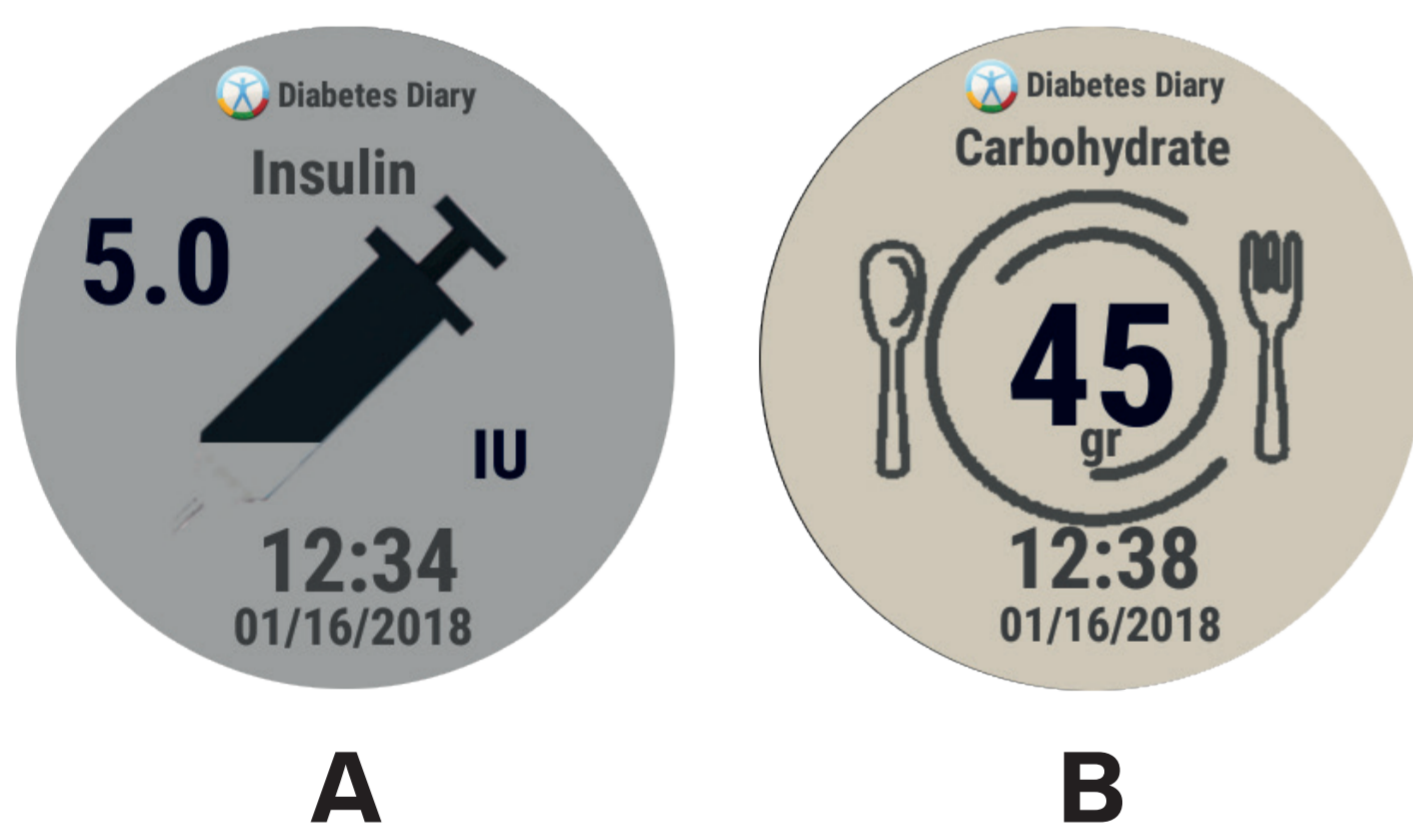


Figure 2. A-B: Insulin and carbohydrate registration fetched from the Diabetes Diary mobile application. Due to the latest value, the injector is filling up to make it easy to visualize status for insulin dose.

### Daily Steps and Heart Rate

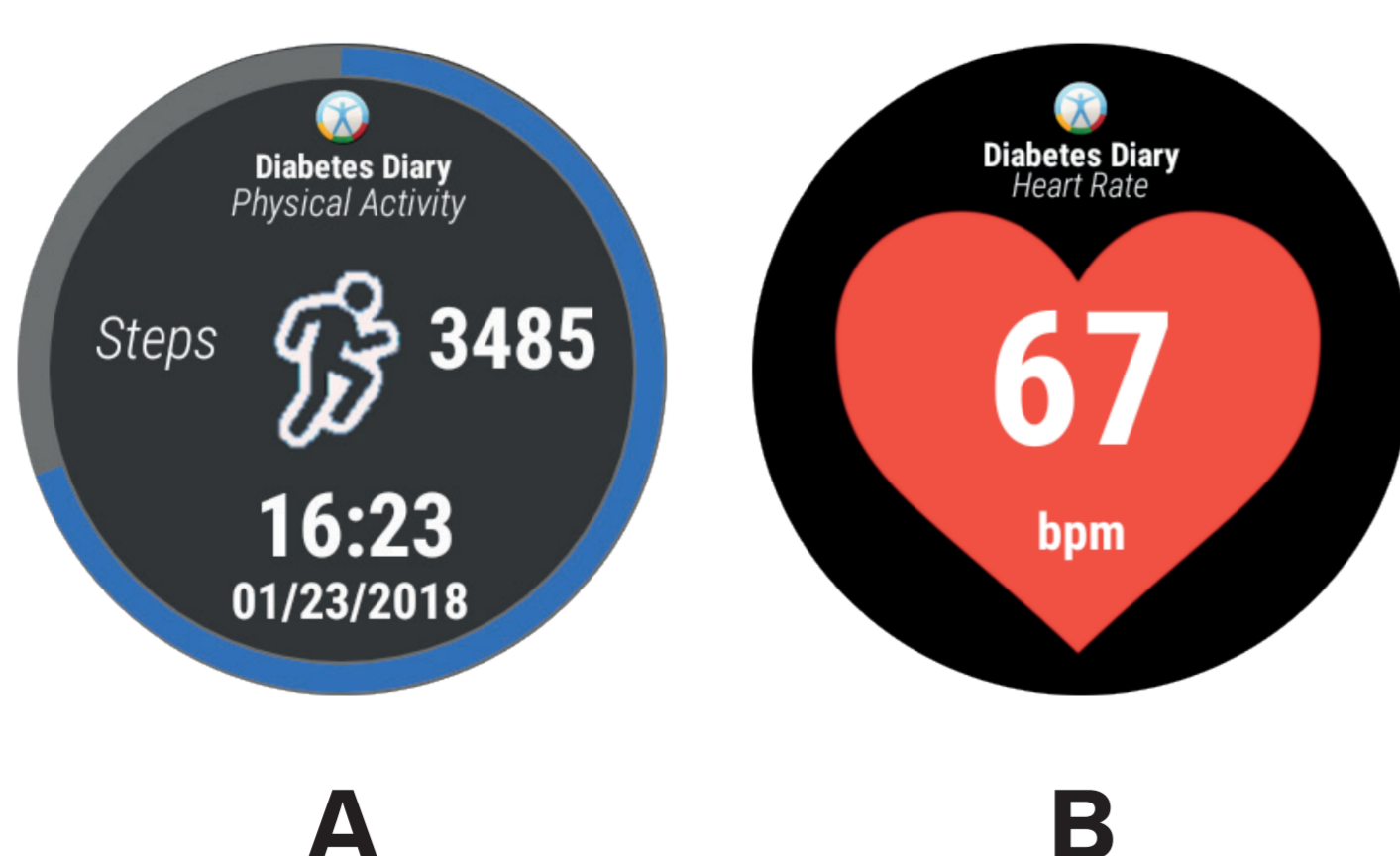


Figure 3. A-B: The current steps number and heart rate measurement extracted from integrated sensors. The daily step page has a progress bar which is progressing gradually until to reach the daily goal.



Figure 4. Diabetes Diary Android Wear Watch Face

Android Wear devices provide advanced capabilities for watch faces that you can leverage in your designs, such as vibrant colors, dynamic backgrounds and data integration [3]. We decided to design a watch face which is integrated with the application to show all the latest values. The color for blood glucose on the face is changing due to the latest value, and it is possible to reach the application pages by touching the values on the screen (Figure 4).

## Results

Our proposed smartwatch application design exemplifies a utilization of advanced smartwatch technology in a combination with a smartphone-based diabetes diary.

We are currently exploring possibilities to include real-time blood glucose data from continuous blood glucose monitors (CGM).

The application is designed according to useful feedbacks from three people with diabetes. It is tested with success for daily usage by one patient.

## Conclusion

The documented design serves as a basis for a future research and development of a combined diabetes diary application for Android Wear platform and smartphones.

## References

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