Data Representations for Smartwatch Screens

Advisors

Alaul Islam, Email: mohammad-alaul.islam@inria.fr
Petra Isenberg, Web: https://petra.isenberg.cc Email: petra.isenberg@inria.fr

Internship Location

Bat 660, Digiteo Moulon, Université Paris Sud, 91190 Gif Sur Yvette

Topic

People increasingly wear smartwatches that can track a wide variety of data. However, it is currently unknown which data people consume and how it is visualized. To better ground research on smartwatch visualization, it is important to understand the current use of these representation types on smartwatches. To learn more about it we conducted a survey with 237 smartwatch wearers, and found a predominant display of health & fitness data, with icons accompanied by text being the most frequent representation type **[1].**

We also found that on average participants see five different types of data on their watch faces and that there are some common combinations of data that are shown together. As five is a relatively large number for a small smartwatch display, an open research question is how to help people cope with such a dense data display. For this

purpose, we need a potential candidate for this internship who is passionate about research, design, and implementation of a prototype for real-life users.

The goal of the internship can be divided into two tasks:

- Design smartwatch faces that include visualizations for a variety of data - based on our previous study (see above)
- Evaluate which data representation, visualization, and watchface designs smartwatch wearers prefer
- Develop a prototype implementation of a watchface and deploy it on a watchface distribution service such as Facer
- Study adoption of the watchface(s)

Required Skills

- Interest & design skills, knowledge of Design tools (e.g,Adobe)
- **a plus:** knowledge of Wear OS/Android, interest in future publication

Background

The project is part of work on an ANR grant on studying micro visualizations in various usage scenarios. Related work includes:

[1] Alaul Islam, Anastasia Bezerianos, Bongshin Lee, Tanja Blascheck, Petra Isenberg. Visualizing Information on Watch Faces: A Survey with Smartwatch Users. Short Papers of the IEEE Conference on Visualization (VIS), Oct 2020, Los Alamitos, CA, United States. Download Link

[2] T. Blascheck, L. Besançon, A. Bezerianos, B. Lee, and P. Isenberg. Glanceable visualization: Studies of data comparison performance on smartwatches. IEEE Transactions on Visualization and Computer Graphics, 25(1):630–640, 2019. doi: 10.1109/TVCG.2018.2865142

[3] F. Amini, K. Hasan, A. Bunt, and P. Irani. Data representations for in-situ exploration of health and fitness data. In Proceedings of the Conference on Pervasive Computing Technologies for Healthcare (PervasiveHealth),pp. 163–172. ACM, New York, NY, USA, 2017. Doi: 10.1145/3154862.3154879