

What Can a Smartwatch Tell Us About a City?



Robin Palmberg is a PhD researcher at ITRL with a background in human computer interaction.

In this interview, Robin shares some of his thoughts on his most recent publication:

Built Environment Characteristics, Daily travel and Biometric Readings:

Creation of an Experimental Tool based on a Smartwatch Platform

In order to make ITRL's research more accessible to both industry and the public, we asked a range of questions designed to give an overview of Robin's paper and inspire you to learn more.

What is the article about?

The article is about how we can use new technologies, like smartwatches and smartphones and combine those to collect information about the daily routines of people when they are traveling in the city. **Then we extract information from this to analyse behaviour and see how people are affected by their travel.**

Using smartwatches for example, we can collect biometric information such as heartrate and that can tell us quite a lot about the mental state of the person, like if the person is stressed or not. Using this data, we can see how different areas of the city affect people in general.

How does this research make a positive impact on society?

Since my background is in human computer interaction, there is always a division between the things you want to affect the person and things you don't want to affect the person. If it does affect a person, it will be either positive or negative.

When you talk about designing a city, there should either be no effect on the person or a positive effect. **You don't want a city that has a negative impact on a person. So, by understanding how different parts of the city affect people differently, we**

can find examples of "good" parts of the city that affect people in a positive way, or are not affecting them at all, and we can replicate that in areas that have a "negative impact on people".

So, for example, if there is a part of the city in which there are a lot of cars and people that are crossing the road are super stressed, that is typically a negative impact.

In another similar location we may see that there is a bridge over the road and people are not affected at all, or are positively affected. Then that bridge is a better solution which can be replicated in the first area for example.



Smartwatches can be a low cost, effective tool in collecting data on how people are affected by different environments

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What should industry be paying attention to in regards to the article?

I hope they see the value in collecting this kind of psychophysiological data; that is, all types of data that is collected through heartrate or similar, that reflects how the person feels, or what the mental state of a person is. Further, that they realise that it is easy to collect this data and use it to find out how they can better design the future of cities. You can also use the same information in manufacturing cars for example.

In the MERGEN project (Robin's current project), we are trying to figure out how to create a good interaction design for controlling vehicles, using the same principle.

What is the take home message of the paper?

The take home message is that we can easily, with just one sensor, get a lot of data and get a feel for how people are affected by different areas. There doesn't need to be a super controlled environment to get a feel for what is going on; we just need a single piece of information and that can influence the way we design things a lot.

What new research did you hope/ has this paper led to?

I hope that people see the value in how people perceive things, but also on how this data affects other aspects. I am focusing on perception, in other words, how things affect the brain, but you could also focus on pollution and how that is affecting the nervous system, or oxygen levels in blood (data that is very easy to collect).

So, I hope that more people see that it is very easy to strap this cheap device on say 50 people, and send them out to live their regular lives and then after a few months collect them and we have a bunch of data on different situations.

Summary:

Thanks for taking the time to explain your research to us Robin. If I were to summarise the importance of your research, I would say that traditionally researchers rely on how people perceive things, which is open to different variables and to misrepresentation, whereas your way of collecting data is very accurate exactly because people cannot misrepresent what their body is telling you. Would this be a fair description?

Exactly. We are trying to remove the human factor from collecting data about humans!

You can read Robin's full research article [here](#), or feel free to [contact Robin](#) for more information.

