Mood-tracking app paves way for pocket therapy

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The Emotion Sense app asks users to record their feelings on a chart designed by psychologists, then surveys them further to assess their mood accurately. This is cross-referred with data about their behaviour, picked up by sensors within the phone itself. Credit: Neal Lathia, University of Cambridge Computer Lab

(Phys.org) —An Android app which keeps tabs on users' mood swings and works out what might be causing them has been developed by researchers, with implications for psychological therapy and improving well-being.

A smartphone app that tracks people's feelings and works out what might be triggering peaks in their mood, using the data invisibly captured by

their phones, has been developed by researchers.

The free app, called "Emotion Sense" has just been launched and is available for Android. It takes advantage of the fact that smartphones are increasingly capable of collecting information about where we are, how noisy our environment is, how much we are moving around, and who we communicate with.

Unlike other, similar, research projects, Emotion Sense then combines systematically-gathered data from a wide range of sensors with the user's own report about their mood, which is entered through a system designed by psychologists. First, the user is asked to mark how they feel using an on-screen matrix called an "emotion grid". Based on their response, the phone then conducts a brief survey, to clarify their emotional state.

By cross-referring both sets of data, the app's designers hope that it will accumulate a very precise record of what drives people's emotional peaks, showing, for example, when they are likely to be at their most stressed, or when they feel most relaxed. This could prove particularly valuable for helping people who need specialist psychological support.

Emotion Sense is also a live research project. The University of Cambridge-led team behind it previously carried out lab-based investigations in which participants were asked to record their feelings in a diary. The new system allows them to gather data about both the drivers of people's moods, and how far smartphones can record this, in a "real world" setting.

Dr Neal Lathia, a research associate in the University's Computer Laboratory, explained: "Behind the scenes, smartphones are constantly collecting data that can turn them into a key medical and psychological tool. Any smartphone now comes with numerous sensors that can tell

you about aspects of your life, like how active you are, or how sociable you have been in the past 24 hours. In the long term, we hope to be able to extract that data so that, for example, it can be used for therapeutic purposes."

The app was created as part of a wider project, funded by the Engineering and Physical Sciences Research Council, called "Ubiquitous and Social Computing for Positive Behaviour Change" (or "UBhave"). Its overall aim is to see how far mobile phones can be used to monitor people's behaviour and, where appropriate, change it for the better to improve their health and well-being.

"Most people who see a therapist may only have an appointment once every fortnight," Dr Cecilia Mascolo, a reader in mobile systems at the Cambridge Computer Lab said. "Many, however, keep their phones with them most of the time. In terms of sheer presence, mobiles can provide an ongoing link with a person."

Researchers have long been interested in the potential of mobile phones to monitor people's behaviour. By combining the data from the GPS, accelerometer, and microphone with a log of the user's calling and texting patterns, a study of a person's smartphone can offer a very useful record of their habits, activities and routines.

Previous research by the Emotion Sense team focused on the potential of the microphone, tracking users' conversations to work out how they were feeling. The research now seeks to exploit a wider range of sensors, combined with self-reporting from the user themselves, who can input data about how they feel.

When Emotion Sense is opened for the first time, only one sensor is "unlocked". The app spends roughly a week collecting data from this sensor and testing it against the user's emotional state. At the end of this,

the user is asked to complete a short life-satisfaction survey, which unlocks a new sensor. After about eight weeks, a full range of sensors has been tested. This systematic approach provides the researchers with valuable data for study, but it is also designed as a "journey of discovery" for the user, giving them a step-by-step insight into what might be influencing their own mood swings.

Mood itself is registered through a system designed by psychologists within the research team. At different times of the day, the app sends the user a notification, rather like receiving a text message, asking them about their mood. These can be set to pop up on the phone as little as twice a day, and assess the user's mood using a custom-designed "emotion grid", followed by a survey.

The grid has two axes, one stretching from "negative" to "positive" feelings, and one from "active" to "inactive". Using their touchscreen, the user simply chooses the point on the grid that reflects how positive and active they feel. For example, a point close to the top right indicates high positivity and activity, suggesting that they feel energised or excited.

Uniquely, this general overview is then refined by a short survey, which asks the user to clarify exactly how they feel. The entire process takes about two minutes to complete.

"Most other attempts at software like this are coarse-grained in terms of their view of what a feeling is," Dr Jason Rentfrow, Senior Lecturer in the Department of Psychology at the University of Cambridge, said. "Many just look at emotion in terms of feeling happy, sad, angry or neutral. The aim here is to use a more flexible approach, to collect data that shows how moods vary between people . That is something which we think is quite unique to the system we have designed."

The code which is used in Emotion Sense to collect sensor data from people's phones is also being made available on an open-source basis so that other researchers can conduct their own experiments. It can be found at emotionsense.org/code.html . For information about the app in general, visit: emotionsense.org

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