

# Mood in the City - A Discussion of Urban Location-Related Mood Tracking under the Aspects of Interaction Design and Benefits of Use

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**Abstract.** In this paper we discuss urban location-related mood self-tracking with respect to interaction design and benefits of use. The design of the interaction workflow in conjunction with software architecture needs to consider in which way mood data will be gathered, stored, shared and represented. Interaction and collected information could serve for single citizens to become aware of one's own and others' mood in relation to public spaces. From this viewpoint, the proposed system could serve citizens to learn about themselves in relation to a smart, in the sense of "technologically enhanced", city. Additionally, collected information could be useful to trigger reflection on city-level in terms of viewing the city as socio-technical system. In this sense the proposed system could serve city government to learn about city design by collecting data from its most central constituent: the people visiting, living or working in a city.

## 1 Mood in the City

Open environments impact humans' affective states. The design of public spaces, as well as the actions and interactions between people, impacts the affective states of all who pass through. The relationship of mood and places has been of interest to all sorts of people for a variety of reasons.

In "the pursuit of urban happiness"<sup>3</sup>, researchers and (city) designers investigate what sort of city design makes people feel happy and relaxed. To this purpose, plans for building highways were cancelled in Bogota in 1998 and cycle lanes were planned instead<sup>4</sup>. Since then, computer scientists have taken an interest and became involved. An initiative called *urbangems*<sup>5</sup> analysed Google street

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<sup>3</sup> <http://researchswinger.org>

<sup>4</sup> <http://www.bbc.com/travel/feature/20130828-reclaiming-the-streets-in-bogata>

<sup>5</sup> [www.urbangems.org](http://www.urbangems.org)

view images of London with state-of-the art image analysis methods, and used crowdsourcing to rate images in the dimensions beauty, happiness, quietness and deprivation. The authors found that the amount of greenery is the most positively associated visual cue along with beauty, happiness and quietness [5]. Similar results are found in a study based on geo-tagged tweets [1]. In [6], the authors used these findings as basis for providing directions within a city that are not based on length of route (shortest path recommended) but on emotional pleasantness. As self-tracking technology has become available and acceptable for the masses, galvanic skin response trackers were used in the *bio mapping*<sup>6</sup> initiative to automatically track emotional arousal of study participants in conjunction with the geographic location. The underlying rationale was to “become aware of our own and each others’ unique body reactions to the environment to create a better world” (ibid). In addition to these very societally motivated works and initiatives on a socially larger scale, a plethora of mood self-tracking apps in the spirit of Quantified Self exist on the web<sup>7</sup>. These apps have been scientifically investigated on how different contextual elements influence mood [3,7], or improve collaboration in virtual meetings [2], however the relation of mood and places was not investigated specifically. In [4], a system for location-based emotion tagging has been developed, but not evaluated or used by a significant number of users (WiMo). Within WiMo, users can decide to share their mood tags with others via places. All mood entries are sent to a WiMo server. Note that in all the above-described related work, mood tracking is sometimes manual, and sometimes “automatic” via sensors that approximate mood via physiological reactions. In this work, we discuss a system for self-tracking mood specifically in relation to public spaces with respect to interaction, software architecture and benefits of use for stakeholders. We do not specifically discuss a system design for learning but propose a system that could be used to facilitate learning by taking mood and location as well as other contextual elements into account.

## 2 Interacting with Urban Location-Based Mood Tracking Software

In this section we discuss system design challenges with regard to interaction and software architecture for self-tracking mood in public spaces. In the case there are several possibilities, we emphasize the design decision we use as a starting point for prototype implementation in a user-oriented design and development process.

Self-tracking of mood raises interaction design issues that relate to the visual representation of mood, and to the mode of input: We assume that mood tracking is done via mobile internet-enabled devices such as smartphones or tablets. It has to be investigated how the users will be entering their mood: do users have to be prompted to enter their mood, do they enter their mood proactively, or

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<sup>6</sup> [www.biomapping.net](http://www.biomapping.net)

<sup>7</sup> For instance: <http://www.moodjam.com>, <http://www.moodscope.com>

is the implementation of a *hybrid method* more feasible (e.g., via reminders)? Additionally, it is a priori unclear whether users wish to express only their mood or want to *add additional context information*, e.g., in the form of text, a photo, etc., as users are increasingly used to from other social apps and platforms. It has to be investigated if automatically collected contextual information about the user’s surroundings would be feasible or accepted by the user. Such contextual information could be time, day of the week, weather conditions or proximity to other people. We assume, that *location does not need to be manually entered* into the system but can automatically be obtained via GPS, WiFi positioning, QR-tagged public spaces, etc. Positioning only allows for mood tracking related to the place where one currently is. It is unclear, whether in a system as proposed, mood tracking at a later time is desirable, e.g., stating in the evening that one was really relaxed in the afternoon while staying in the park.

At the intersection of interaction design and software architecture we place the question of where tracked mood data are stored. In [4], all data are stored on a server, but only shared under specific circumstances. An alternative would be to share every mood entry, i.e., to view the system essentially as a public mood tracking system. On the other end of the privacy spectrum, mood tracking would be individual, and *data stored on personal mobile devices*. Mood data would only be *shared on specific user action*. On sharing, mood entries could be shared with or without usernames. The latter is most usual in social apps and platforms.

So far, we have discussed the capturing of mood. But how about interacting with location-related mood entries? System users should be able to *visualise shared mood on their mobile device for the current place*. Should *all users of the system get an overview of mood in the city*, or should this be reserved for city government? Should also non-users of the system, as “users of the city”, be informed about collectively tracked mood? In all these cases, visualisation of collectively tracked mood and interactive exploration of captured mood data is an issue. In the case where every visitor of a public space should have the possibility to explore such data, interaction could be via a public website, or be mediated by an in situ ambient device.

### 3 Benefits of Use

Even designing a system based on principles of user-oriented design does not guarantee its acceptance by the target user group. Technology acceptance has been linked, in organisational settings, to perceived ease of use and benefit [8]. For individual citizens, interaction and collected information could serve to increase awareness about one’s own mood and mood of others in relation to (public) spaces. Mood-tracking users of the system could furthermore use knowledge about their mood in relationship to places to use them as resources for well-being, and to avoid possible emotionally draining places. From this viewpoint, urban location-based mood tracking would mean enabling citizens to learn about themselves in relation to a smart, “technologically enhanced” city. Additionally, collected information could be useful to trigger reflection on city-level by respon-

sible persons in the city government in terms of viewing the city as socio-technical system. In this sense the proposed system could serve city government to learn about city design by collecting data from its most central constituent: the people visiting, living or working in a city.

## 4 Outlook

We have discussed urban location-based mood tracking from an interaction design perspective, and from a motivational perspective also describing its possible benefits. We plan to implement such a system based on principles of user-oriented design of interactive systems in an iterative way, with input from relevant stakeholders, which are mostly people who work or live in a city, visit cities, or manage cities. We furthermore plan to deploy such a system, in order to evaluate its usability and its acceptance, delving into questions of benefits and motivations of usage based on empirical data.

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