



PARTICIPANT INFORMATION LEAFLET

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Study Title: Emotion sensing using heterogeneous mobile phone data

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Introduction

You are invited to take part in a study for **Emotion sensing using heterogeneous mobile phone data**. Before you decide, you need to understand why the research is being done and what it would involve for you. Please take the time to read the following information carefully. Talk to others about the study if you wish.

(Part 1 tells you the purpose of the study and what will happen to you if you take part. Part 2 gives you more detailed information about the conduct of the study)

Please ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

PART 1

What is the study about?

We want to use textual data entered by users in their mobile phones as a proxy for their emotions, in conjunction with information about their location and phone usage, so as to understand the effect of the environment on emotional fluctuation. We also plan to calibrate our results against the Warwick-Edinburgh mental well-being scale (WEMWBS) and the Positive and Negative Affect Schedule (PANAS). We anticipate that the results from this study will (a) provide an effective, relatively non-invasive means for monitoring emotional fluctuation, with potential in helping personalized mental health management (b) will allow us to understand what types of interventions in cities may be beneficial in addressing environmental factors affecting people's mood.

We propose to study a cohort of 30-50 students between 18-24 as this is a group subjected to high levels of stress and uncertainty, with frequent occurrence of mental health issues (over 100% more likely than other age groups for 12-month prevalence, according to the National Institute for Mental Health, USA).

We plan to carry out an initial 3-4 month long study with students from New York University (NYU) in New York City, as this will give the potential to correlate emotions with places and locations within one of the most vibrant and dynamic urban environments imaginable. This also has the potential for correlations with measurements of factors such as noise, pollution, temperature collected by sensors installed in NYC.

While there have been studies conducted on detecting emotions from twitter data and creating mood heat maps of city locations, based on tweets, we are not aware of another study which collects and combines heterogeneous data such as social media data, texts as

well as phone usage and location to observe emotional fluctuation in relation to environmental factors and addressing the goals mentioned above.

Do I have to take part?

It is entirely up to you to decide. We will describe the study and go through this information sheet, which we will give you to keep. If you choose to participate, we will ask you to sign a consent form to confirm that you have agreed to take part. You will be free to withdraw at any time, without giving a reason and this will not affect you or your circumstances in any way.

What will happen to me if I take part?

In order to take part you need to be an Android phone user.

1) we will ask you to share with us your Twitter, Facebook and Google+ id and Facebook account details and give us permission to read your posts and messages on these services.

2) We will ask you to fill in a questionnaire to measure your mental well-being on a daily basis according to the Warwick-Edinburgh mental well-being scale (WEMWBS), which is used as a national standard by the health services in the UK as well as the Positive and Negative Affect Schedule (PANAS). Both levels of participation will involve completing the WEMWBS and PANAS.

3) We will ask you to install one or two apps on your android phone.

- DeviceAnalyzer (<http://deviceanalyzer.cl.cam.ac.uk/>) developed at the University of Cambridge, UK. This app will be enough for medium level participation.
- SMS collection application, developed at the National University of Singapore (<http://wing.comp.nus.edu.sg:8080/SMSCorpus/appUserGuide.jsp>) for full participation.

Both of these apps have obtained ethical approval from their respective Universities. A token will be assigned to you and DeviceAnalyser will allow us to collect anonymous information (associated with the token) about your phone usage e.g. how many texts you send, which wireless network you connect to and your location. The Android SMS collection application (full level participation only) takes your texts and packages them as emails, which are sent to us through mail. You can opt for an automated or manual submission, which means you can choose which texts to share.

How will my data be used?

We will be labelling your SMS-texts (full level participation only) as well as your tweets, messages and Facebook status updates with a set of emotion categories (e.g. hope, love, anger etc) and will be observing emotional fluctuation over time and in relation to the environment.

These findings will be correlated with the data we collect using DeviceAnalyzer and We will be correlating your answers with the textual data as well as the DeviceAnalyzer data. The data collection phase will last 3-4 months (depending on the volume of data). We will also be looking at data 3-4 months prior to the study in your Twitter, Facebook and Google+ accounts. You can opt out of some parts of the study.

What are the possible disadvantages, side effects, risks, and/or discomforts of taking part in this study?

The fact that you are sharing some of your private data with the investigators of this study and some slight discomfort in sending us your texts as emails, packaged using the Android SMS collection application, if you choose not to use the automated setting. The investigators

of this study are committed to protecting your data and will not be disclosing any information to any third parties unless there is some indication of danger to your life.

What are the possible benefits of taking part in this study?

Participants will be obtaining a copy of any publication resulting from the study and if they wish to we can give them their own personalised results, regarding their own emotional fluctuation.

Expenses and payments

At the end of the data collection (if you are one of the first 30 to sign up) you will be receiving either \$150 or \$250 worth of Amazon vouchers, depending on your level of involvement. Participants at medium level participation will be receiving \$150 worth of Amazon vouchers whereas participants at full level will be receiving \$250 worth of Amazon vouchers.

What will happen when the study ends?

We will ask you remove the read permissions from Facebook, Twitter and Google+, so we no longer have access to your accounts. We will ask you to deinstall the apps from your smartphone so no more data is collected. Your data will be anonymised and analysed. The fact that you participated in the study will remain confidential and kept in a secure location.

Will my taking part be kept confidential?

Yes. We will follow strict ethical and legal practice and all information about you will be handled in confidence. Further details are included in Part 2.

What if there is a problem?

Any complaint about the way you have been dealt with during the study or any possible harm that you might suffer will be addressed. Detailed information is given in Part 2.

This concludes Part 1.

If the information in Part 1 has interested you and you are considering participation, please read the additional information in Part 2 before making any decision.

PART 2

Who is organising and funding the study?

The study is organised by Dr Maria Liakata at the University of Warwick, Department of Computer Science, together with Dr Weisi Guo Warwick, Engineering and Dr Masoud Ghandehari and Dr Theo Damoulas, NYU Center for Urban Science and Progress. An MSc student of Applied Urban Science and Informatics, Brigitte Jellinek, will be helping us with the study. This study is funded by the Warwick Research Development Fund and by an IBM Faculty Award to Dr Liakata.

What will happen if I don't want to carry on being part of the study?

Participation in this study is entirely voluntary. Refusal to participate will not affect you in any way. If you decide to take part in the study, you will need to sign a consent form, which states that you have given your consent to participate.

If you agree to participate, you may nevertheless withdraw from the study at any time without affecting you in any way.

You have the right to withdraw from the study completely and decline any further contact by study staff after you withdraw.

Please note withdrawal from the study will not affect your place on the course or your grades in any way. You will not receive any amazon vouchers but this is the only consequence of withdrawing from the study.

What are my rights as a subject?

For questions about your rights as a research participant, you may contact the University Committee on Activities Involving Human Subjects (UCAIHS), New York University, 665 Broadway, Suite 804, New York, NY 10012 at 212-998-4808 or ask.humansubjects@nyu.edu .

Will my taking part be kept confidential?

Yes, study information (consent forms and administrative records) will be kept in strict confidentiality by the study investigators. The investigators will not normally access your name and identity, and are primarily interested in the emotional and environmental context of the data. The data will be associated with a token, and the link between the token and the real name is stored safely and is unlikely to be accessed by anyone other than the primary investigator.

What will happen to the results of the study?

The findings of this study will be published in a conference and later a journal. All data will be used anonymously.

Who has reviewed the study?

This study has been reviewed and given favourable opinion by the University of Warwick's Biomedical and Scientific Research Ethics Committee (BSREC): REGO-2013-574 19/11/2013 and the UCAIHS, NYU: 14-9912.

What if I want more information about the study?

If there is anything about the study or your participation that is unclear or that you do not understand, if you have questions or wish to report a research-related problem you may contact the research group at mobilesense-group@nyu.edu, or Maria Liakata, M.Liakata@warwick.ac.uk, Assistant Professor, Department of Computer Science, University of Warwick, Tel: +44 (0) 24 7652 3681/ Exchange Assistant Professor, Center for Urban Science and Progress, NYU or the faculty sponsor Masoud Ghandehari, masoud@nyu.edu , 1 MetroTech Center, 19th Floor, Brooklyn, NY 11201.

Thank you for taking the time to read this participant information leaflet.