

UNIVERSITY OF ILLINOIS  
AT URBANA-CHAMPAIGN

Office of the Vice Chancellor for Research

Office for the Protection of Research Subjects  
528 East Green Street  
Suite 203  
Champaign, IL 61820



April 26, 2016

Nikita Borisov  
Department of Electrical & Computer Eng  
460 CSL  
1308 West Main Street  
Urbana, IL 61801

RE: *Analyzing The Impact of Sensor Obfuscation Techniques on Smartphones*  
IRB Protocol Number: 16796

Dear Dr. Borisov:

This letter authorizes the use of human subjects in your project entitled *Analyzing The Impact of Sensor Obfuscation Techniques on Smartphones*. The University of Illinois at Urbana-Champaign Institutional Review Board (IRB) approved, by expedited review, the protocol as described in your IRB application. The expiration date for this protocol, IRB number 16796, is 04/21/2017. The risk designation applied to your project is *no more than minimal risk*.

Copies of the attached date-stamped consent form(s) must be used in obtaining informed consent. If there is a need to revise or alter the consent form(s), please submit the revised form(s) for IRB review, approval, and date-stamping prior to use.

Under applicable regulations, no changes to procedures involving human subjects may be made without prior IRB review and approval. The regulations also require that you promptly notify the IRB of any problems involving human subjects, including unanticipated side effects, adverse reactions, and any injuries or complications that arise during the project.

If you have any questions about the IRB process, or if you need assistance at any time, please feel free to contact me at the OPRS office, or visit our Web site at <http://oprs.research.illinois.edu>.

Sincerely,

Michelle Lore, MS  
Human Subjects Research Specialist, Office for the Protection of Research Subjects

Attachment(s): On-line informed consent document and Waiver of Documentation of Informed Consent form

c: Anupam Das

**Rate Relative Difficulty**

# Rate difficulty for **Setting A** (1=very easy and 5=very hard):

1 2 3 4 5

# Rate difficulty for **Setting B** (1=very easy and 5=very hard):

1 2 3 4 5

# Rate difficulty for **Setting C** (1=very easy and 5=very hard):

1 2 3 4 5

(Optional) Comments:

**Submit Ratings**

- Once you submit your ratings you can either try out the 'Next Level' or go to the 'Main Menu' to retry any of the previous level(s).

AT&T 1:55 PM 92%

datarepo.cs.illinois.edu

**Try more levels!**

**Next Level**

**Main Menu**

We request participants to complete all 5 levels as this will provide us with the full picture.

## Consent

You are invited to participate in a research study on how users react to different forms of noise injection into motion sensors on smartphones. This study is being conducted by

Anupam Das, a PhD candidate in the Department of Computer Science, and Nikita Borisov, Associate Professor in the Department of Electrical and Computer Engineering from the University of Illinois at Urbana-Champaign.

This study will take approximately 5-10 minutes of your time. You will be asked to play a game consisting of 5 different levels where each level is played under 3 different settings. At the end of each level you will be asked to rate the relative difficulty of the 3 settings. The objective of the survey is to understand to what extent different privacy preserving techniques impact the utility of motion sensors in smartphones.

Your decision to participate or decline participation in this study is completely **voluntary** and you have the right to terminate your participation at any time without penalty. If you do not wish to participate in this study just close this browser window.

Your participation in this research will be completely **confidential**. In general, we will not tell anyone any information about you. When this research is discussed or published, no one will know that you were in the study. However, laws and university rules might require us to disclose study information. For example, if required by laws or University Policy, study information may be seen or copied by the following people or groups: a) The university committee and office that reviews and approves research studies, the Institutional Review Board (IRB) and Office for the Protection of Research Subjects, or b) University and state auditors, and Departments of the university responsible for oversight of research. Also data will be averaged and reported in aggregate. Possible outlets of dissemination may be a research article submitted to a conference. Although your participation in this research may not benefit you personally other than providing temporary entertainment, it will help us understand to what extent our countermeasure techniques can thwart smartphone fingerprinting and thus protect user privacy.

The study is conducted **anonymously** and we are not tracking any email, IP address or other identifiable information. We are only tracking the response of each user by inserting a pseudo-random number inside the cookie of the browser. Survey results are stored in a server residing behind campus firewall. Our project went through IRB review and the official IRB letter is available [here](#).

You may [contact us](#) with any questions or suggestions about this project.

If you have any questions about your rights as a participant in this study or any concerns or complaints, please contact the University of Illinois Institutional Review Board at 217-333-2670 or via email at [irb@illinois.edu](mailto:irb@illinois.edu).

Please print a copy of this consent form for your records, if you so desire.

**I have read and understood the above consent form, I certify that I am 18 years old or older and, by clicking the following link [Labyrinth](#), I indicate my willingness to voluntarily take part in the study.**

## **FAQ (Frequently Anticipated Questions)**

1. [How long will this take?](#)
2. [What kind of platforms and browsers are supported?](#)
3. [How much bandwidth is used for uploading survey data?](#)

4. Where is the data stored?
5. What is being measured and why?

***How long will this take?***

It should take around 5-10 minutes. However, the total time required may vary from user to user.

***What kind of platforms and browsers are supported?***

Our game supports both iOS and Android platform. Any of the following browsers should work fine-

1. Chrome
2. Safari
3. Opera
4. Firefox

***How much bandwidth is used for uploading survey data?***

In total around 5-10kB of data is uploaded into our server.

***Where is the data stored?***

User feedback is sent out to a server situated inside the UoI campus. We plan to make the data public to other researchers in future.

***What is being measured and why?***

We are measuring how different forms of noise impact the utility of the motion sensors in smartphone. Such studies would enable us to provide countermeasures to sensor fingerprinting while still retaining the functionality of the motion sensors.

**University of Illinois at Urbana-Champaign  
Institutional Review Board**

Approved: April 22, 2016  
Expires: April 21, 2017  
IRB #: 16-796



University of Illinois  
at Urbana-Champaign

Institutional Review Board Office  
528 East Green Street, Suite 203, MC-419  
Champaign, IL 61820  
tel: 217-333-2670 fax: 217-333-0405  
E-mail: [irb@illinois.edu](mailto:irb@illinois.edu) Web: [www.irb.illinois.edu](http://www.irb.illinois.edu)

WAIVER OF DOCUMENTATION OF INFORMED CONSENT (45CFR46.117(C))

ALL APPLICATIONS MUST BE TYPEWRITTEN, SIGNED, AND SUBMITTED AS SINGLE-SIDED HARD COPY. PLEASE, NO STAPLES!

Responsible Project Investigator (RPI):

Last Name: Borisov	First Name: Nikita	Dept. or Unit: Electrical and Computer Engineering
Phone: (217) 244-5385	Fax: (217) 244-5685	E-mail: <a href="mailto:nikita@illinois.edu">nikita@illinois.edu</a>

Project Title:

Analyzing The Impact of Sensor Obfuscation Techniques on Smartphones

To request a waiver of documentation (signature) of informed consent, please provide a response to EITHER of the following questions. Please be specific in explaining why either statement is true for this research.

(1) That the only record linking the subject and the research would be the consent document and the principal risk would be potential harm resulting from a breach of confidentiality. Each subject will be asked whether the subject wants documentation linking the subject with the research, and the subject's wishes will govern. \*Note: A waiver of documentation of informed consent is **not permissible under this category if the research is subject to FDA regulation**.

--

(2) The research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context. \*\*

Participation is voluntary and anonymous. We, therefore, feel written (signature) consent conflicts with our study being anonymous (written consent links the participants to the study).

\*\* In cases in which the documentation requirement is waived, the IRB may require the investigator to provide subjects with a written statement regarding the research.

RPI Signature:  Date: April 12, 2016

IRB Member Approval: \_\_\_\_\_ Date: \_\_\_\_\_

University of Illinois at Urbana-Champaign  
Institutional Review Board

Approved: April 22, 2016  
IRB #: 16796