Ecole Doctorale STIC

Sciences & Technologies de l'Information et de la Communication

ED STIC - Proposition de Sujets de Thèse

pour la campagne d'Allocation de thèses 2017

Axe Sophi@Stic :	SystèmesRéseaux|
Titre du sujet :	Large scale characterization of the exposition to microwaves
Mention de thèse :	Informatique
HDR Directeur de thèse inscrit à l'ED STIC :	Arnaud Legout

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Description du sujet :

English version:

The Internet and new devices such as smartphones have fundamentally changed the way people communicate, but this technological revolution comes at the price of a higher exposition of the general population to microwave electromagnetic fields (EMF). This exposition is a concern for health agencies and epidemiologists who want to understand the impact of such an exposition on health, for the general public who wants a higher transparency on its exposition and the health hazard it might represent, but also for cellular operators and regulation

authorities who want to improve the cellular coverage while limiting the exposition.

The goal of the ElectroSmart project is to develop the instrument, methods, and models to compute the exposition of the general public to microwave electromagnetic fields used by wireless protocols and infrastructures such as Wi-Fi, Bluetooth, or cellular.

The goal of this Ph.D. thesis is to leverage of the formidable amount of measurements we collected to characterize the exposition of the population at scale. The thesis will be conducted along two axis. First, we need to improve the quality of the measurements. This requires to calibrate and normalize the measurements made by smartphones in the wild. To do so we make controlled experiments in an anechoic chambers. The student will be in charge of the scientific exploitation of these measurements and in particular of the definition and validation of correcting functions. Second, we need to perform a statistical analysis of the measurements in order to both define exposure metrics and clean collected data from bogus and inconsistent measurement. The student will be in charge of the definition of new metrics to characterize the exposure and of the statistical analysis (that is, data science) of the measurements.

You can find details on the ElectroSmart project on https://es.inria.fr/