Quantifying and Enhancing Quality of Experience for Smartphone User

Alexandre De Masi & Assoc. Prof. Katarzyna Wac
{alexandre.demasi, katarzyna.wac}@unige.ch

Problem and Goal

The number of smartphone application installations is growing every day. Some applications function flawlessly, others only when the best conditions rise. The user experience is directly impacted by this problem.

Our goal is to quantify and enhance the Quality of Experience (QoE) for the mobile users depending on the nature of the application (e.g., audio, video, text) & the context of the user (e.g. moving between home and work). We focus on the QoE of users in movement (e.g. public transport).

We observe users in the wild and focus on their interaction and expectation with many smartphones-based services such as, video, audio, social network and chat application. We also observe the network’s QoS and the smartphone OS state. We will generate a model able to quantify the end experience while relying on the available metrics and user expectation.

Service, Experience & Expectation

QoE is defined by Qualinet [3] as the degree of delight or annoyance of the user of an application or service. It integrates the technical metrics of QoS and the perceptual feeling of the user. The expectation has a direct impact on the overall experience of a user.

The majority of the QoE research done in the past focus on mapping QoS to QoE [2] & audio and video content [5]. The studies quantify QoE is done with a Mean Option Score (MOS) scale [4] and much of the time done in laboratory setting [1].

Enhancing

We use a layered approach to achieve our goal of a less annoyed user, e.g. a user not able to execute an action on an application.

- Human: Assessing the user emotional state e.g. annoyance or delight during application use via ESM. Preparing the user for a bad experience or/and proposing an alternative.

- Application: New API for allowing fine-grained information about the overall health of the operating system for better resource management and detecting bottlenecks.

- Network: Utilisation of new network protocols that offers better handover, redundancy and multiplexes streams e.g. QUIC and MPTCP.

Once we have enough data for training the model, we stop asking the users input.

Acknowledgement

FNSmodel (SNSF-150003)
Swiss National Science Foundation

References


