Quality of Experience Scoring

Sandvine (ex Procera Networks) would like to host a thesis work in the area of Quality of Experience Scoring. This work will be unusually specific, because the requested output format already exist. So the challenge is to find a scientific method, and develop a set of tools, for obtaining thresholds for QoE scoring in an existing product.

Context:
Sandvine's Scorecard product has been on the market for a year now. It passively analyse subscriber traffic (throughput, latency, and loss) and applies a set of thresholds on these metrics to produce a A-F based score for 7 different application types (web, video, social, gaming, download, upload and over the top voice services). The thresholds should be updated on a yearly basis, because the expectation is that subscribers's expectations change over time. What is an A score for video today, may be a B score next year, and so on. The scores are subjective, and absolute. Meaning that they are based on subjective tests, and no 'excuses' are made for access technologies (2G and 3G networks play in the same scale as FTTH subscriber technology).

Scope of Work:
We want to challenge you with the following. First, find a new method of creating a large set of subjective sample scores in a way that maps to our rules. To implement the method, you will need to develop tools to capture the scores, and to influence a network setup to simulate network impairments (throughput, latency loss). As an example, the method could be to use Amazon Mechanical Turk as a means to get a large sample set. Then the method may be to let each subject use a prescribed application for each application type, and have all subjects view the same video, or play the same game, or do the same action on facebook, etc, for the same amount of time, with a random set of impairments. After that test, they report their subjective score to a framework. Relevant confounding factors about the test subject should be captured (age, location, computer skill, scientific experience, possible biases, etc).

Then we analyse the results of the method, and if the data is useful in the product's context, that is good. If not, we start over with a new method, taking with us what we learned from the last exercise. Rinse and repeat.

Output:
* TM16 - A set of rules for A-F scoring of 7 different application types using Throughput, Latency, Loss as metrics, valid for the year of 2016.
* The definition of a stable method for producing such a ruleset.
* A set of tools or framework required to run a study using the method to produce a ruleset.

Required Skills:
* Software development skills. Likely database schemas, SQL queries, web frontend development, network impairment tools
* Networking skills (TCP/IP)
* Scientific Study interest. Understanding biases, confounding factors, etc.
* Cognitive science skills.

We believe this is the work of a team of 2-3 individuals.

The technical work part of the thesis is forseen to be jointly supervised between a KaU researcher, and a Sandvine senior technical engineer.

The writing part of the thesis will be supervised by the KaU supervisor (i.e the researcher above). Monetary compensation will be provided from Sandvine for students participating in this thesis project.

For questions or more details, please contact Johan Garcia at johan.garcia@kau.se, or visit me at room 21F426.