Foveated streaming protocol
Master thesis/Exjobb
Mobile Services Laboratory
Communication Systems

Task
Recent technological developments have led to novel embodiments of eye-tracking sensors designed to capture users’ eye-gaze information for wearable head mounted displays, such as Virtual Reality (VR) or Augmented Reality (AR) headsets and glasses, opening up new consumer-oriented areas of applications. The eye-gaze information captured by an eye-tracker can be used to estimate the portion of the user screen which is mapped onto the viewer’s fovea, which is considered the area in the eye through which “high quality” information is captured and processed in the brain. The idea with fovea-inspired content processing is to perform a spatial optimization of the visual information on a screen, assigning higher image resolution to the pixel areas estimated within the user’s fovea and lower quality to those contributing to the peripheral vision.

The objectives of this Master Thesis project include the following:

- definition of a class of streaming protocols that features foveated content delivery,
- software implementation of a functioning prototype of a foveal streaming protocol for the provision of YouTube like videos stored on a server.
- evaluation of user experience and bandwidth consumption as compared to current streaming approaches.

Students will be provided access to all required hardware and software for the completion of the work.

Competence
We are looking for a motivated MSc student who has fulfilled the course requirements for the degree project. Good knowledge of Internetworking is required, as well as knowledge of streaming protocols and content delivery mechanisms. In addition, we require good spoken and written English.

Application
Applications should include a brief personal statement, CV, and a list of grades. In the application, make sure to mention previous activities or other projects that you consider relevant for the position. Candidates are encouraged to send in their application as soon as possible. Suitable applicants will be interviewed as applications are received.

Start time: As soon as possible
Location: KTH, Kista, Stockholm

Mobile Service Laboratory
The Mobile Service Laboratory at the Department of Communication Systems' overall aim is to foster innovation, education and research in mobile services. The lab is pursuing the study, design, benchmarking, and evaluation of mobile applications and their associated services.

SEEN
The SEEN project aim at creating a novel content delivery mechanism that optimizes information display based on real-time information from connected eye-trackers, with applications including VR, AR and tactile Internet. The Thesis will be run in cooperation with the project’s partners: Ericsson and Tobii.

Contact
For more information, please contact Pietro Lungaro (pietro@kth.se)