Gaze Tracking in Multiple Video Streams

In the last couple of decades, great strides have been made in the development of visual saliency models, whose goal is to predict where people are likely to look in a given image or video. Such models can then be used in a variety of applications such as image and video compression, object detection and tracking, virtual and augmented reality, and so on. Gaze data is essential for verification and assessment of visual saliency models as it provides the ground truth against which the models are compared.

This project is aimed at collecting a comprehensive set of gaze data for multiple simultaneous video streams. In this scenario, a person is presented with multiple videos at the same time, and their gaze is measured in order to record what draws their attention at any given time. Multi-stream saliency models are useful in a number of applications including video surveillance, anomaly detection, crowd monitoring, security and access control. Using this data, existing multi-stream saliency models will be assessed and proposals for improvement of these models will be made. Further, the use of gaze data as well as multi-stream saliency models will be investigated in several applications, such as object or person detection and tracking, and anomaly detection.

This project is intended for a current SFU Engineering Science undergraduate student with a strong background in mathematics, signal and systems, MATLAB, and C/C++ programming. The successful applicant will work with a number of cutting-edge technologies, such as a head-mounted eye tracker and a Dolby HDR Professional Reference Monitor.