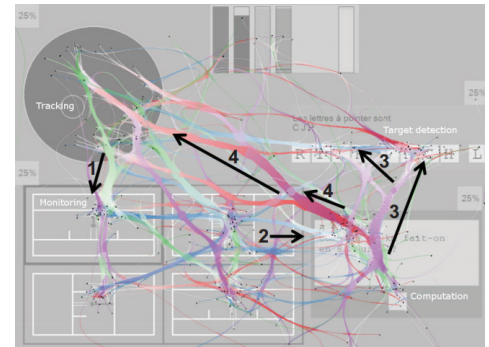




Saccade clustering

Description:

Eye movements can be separated into slow movements such as fixations and smooth pursuit, and fast saccadic movements. We do not perceive anything during saccades because the movement is much too fast. Therefore fixations are well studied, while our knowledge about how we perform saccades is much more limited. However, the information of the saccadic path is important: Saccades shift the locus of attention and drive our gaze through a scene.



Task:

This project is about applying (and probably adjusting) a linear time clustering algorithm for brain fibre activity to work with saccadic trajectories. The result will be a clustering of saccades (= saccade bundle).

The algorithm will be applied to eye-tracking data recorded while viewing fine art and while driving. These bundles could give insight into the perception of art (e.g. do saccades follow composition lines) and can be used to quantify saccadic distributions and traversals towards different interesting areas for driving (e.g. control gaze towards the rear mirror).

The algorithm will be included in our eye-tracking data analysis software EyeTrace.

Requirements:

Basics in C++ programming, ideally experience with Qt.

(Suggested reading: Vector Field k-Means: Clustering Trajectories by Fitting Multiple Vector Fields, Attribute-Driven Edge Bundling for General Graphs with Applications in Trail Analysis)

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