

Mobile Detection of Saccades

- Saccadic eye movements are rapid, simultaneous movements of the eye from different fixation locations. Abnormalities in the occurrence of saccades often evidence underlying neurological conditions. We wish to be able to detect saccades using the cameras in mobile devices, and also detect an approximate pupil gaze direction.
- Students will work with the Kata group in the department of Neurology to develop a mobile application that will ultimately provide vestibular ocular therapies for patients in outpatient and inpatient rehab clinic. Students will be responsible for developing a class in C++ on iOS that can read video from the camera (framework will be provided, and nice entry points), detect pupils, approximate gaze, and detect saccadic movements.
- **Deliverables:**
 - **A. minimum C++ class that can read camera (video feed) from iOS, segment and detect pupil centers, approximate gaze from an assumed head fixed location and distance, and detect saccadic movements.**
 - **B. medium A + image processing done in shader for speed**
 - **C. B + support on Android**
- **Size group:** (no more than 2)
- **Skills:** (C, C++, image processing, computer vision, some iOS but we will provide software framework to get started and easy access points)
- **Mentors:** Omar Ahmad (director Kata, Neurology), Promit Roy (Chief of Software, Kata).
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