

S1. The programming procedures of the EAR Approach of the EyeScore App were as follows with (1) ~ (16) referring to the numbered step in the diagram (Figure 3)

A) Green block: The video was loaded (1) with each frame being iterated (2) for eye landmark detection (3) via VNFaceLandmarks2D from the Apple Vision SDK package. The frame data including coordinates, starting time, and duration will be stored in an array (4);

B) Orange block: The program started with iterating through all the frame data (5). For each frame data with confirmed landmarks (6), The EAR value will be computed using the formula in **Figure 2B (7)** with the data stored next to the frame data from the first loop in the green block (8). A fixed threshold can be established as a classifier for blink count, similar to the previous publication [22]. If the EAR value is less or equal to the threshold (9), the program will check whether an eye blink is observed in the last three frames (10). $N \pm 3$ consecutive frames can be sufficient when their EAR values are below the blink threshold for an HD iPhone video at 30 fps (or 0.03 sec/frame) [22] on blink detection. If yes, the program increments the total number of blinks (11).

C) Purple block: After two loops of code blocks (green and orange), the last set of programming is to find MaxEAR (12) and MinEAR (13) and compute all frames that have eye blink (14) or without eye blink (15). A final blink rate will be summarized and reported (16).

[22] Soukupova, T.; Cech, J. Real-Time Eye Blink Detection using Facial Landmarks. In Proceedings of the 21st Computer Vision Winter Workshop, Rimske Toplice, Slovenia, 3–5 February 2016.