Real-time Facial Asymmetry Analysis User's Manual

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(A) Preface

1. Real-time Facial Asymmetry Analysis (RFAA) is a free software designed for the assessment of facial paralysis.

2. RFAA operates on a Windows ($Microsoft^{(R)}$) computer equipped with a webcam.



3. Both real-time captured videos and pre-recorded videos can be analyzed.

4. RFAA automatically calculates oral displacement ratio (ODR) and eyebrow displacement ratio (EDR).



5. ODR and EDR are defined as shown in the figure below:

ODR = DC'/ AB x 100 (%) EDR = FE'/ AB x 100 (%)

Where

- A and B: Vertexes of the lower two-thirds of the face
- L: Facial midline (perpendicular bisector of AB)
- C and D: Oral commissures on non-paralyzed/paralyzed side
- C': Mirror reflection of point C in terms of L
- E and F: Eyebrow vertexes on non-paralyzed/paralyzed side
- E': Mirror reflection of point E in terms of L

6. Download RFAA.exe to a given folder/directory (e.g. Desktop).

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	Real-time Facial Asymme	etry Analysis (RFA	A)			
	RFAA is an artificial intelligence-based software designed for the assessment of facial paralysis. RFAA enables automated measurement of the facial asymmetry for real-time captured/pre-recorded videos. Downloads					
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(B) Real-time Movie Analysis

1. Double-click the icon to open a console window (may need a few minutes).



- 2. Click the console window to activate.
- 3. Select Real-time movie mode: enter "R" and press Enter key.



4. Select paralyzed side: enter "R" (right) or "L" (left) and press Enter key.



5. A webcam window automatically appears and a measurement is initiated.



6. Terminate the measurement: click the webcam window and press Escape key.

7. The analyzed video (Real-time.mp4) and the time-series data of ODR and EDR (DisplacementRatio.csv) are automatically saved.





8. Post-hoc analysis: time-series data can be analyzed with Excel (Microsoft[®]).

(C) Pre-recorded Movie Analysis

1. RFAA.exe and a pre-recorded movie file should be placed on the same folder/directory.

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2. Activate a console window [as illustrated in (B) 1 and 2].

3. Select Pre-recorded movie mode: enter "L" (load movie file) and press Enter key.



4. Enter pre-recorded movie file name (e.g. Test.mp4).



- 5. Select paralyzed side and start measurement [as illustrated in (B) 4 and 5].
- 6. Terminate the measurement [as illustrated in (B) 6].

7. The analyzed video (Pre-recorded.mp4) and the time-series data of ODR and EDR (DisplacementRatio.csv) are automatically saved.



8. Post-hoc analysis can be performed in the same way as shown in (B) 8.