Video Heart Rate Measurement for the Detection of Trauma-Related Stress States

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Abstract : Finding objective and non-intrusive measurements of emotional and psychopathological states (e.g., post-traumatic stress disorder, PTSD) is an important challenge. Thus, the proposed approach here uses Photoplethysmographic imaging (PPGI) applying facial RGB Cam videos to estimate heart rate levels. A pipeline for the signal processing of the raw image has been proposed containing different preprocessing approaches, e.g., Independent Component Analysis, Non-negative Matrix factorization, and various other artefact correction approaches. Under resting and constant light conditions, we reached a sensitivity of 84% for pulse peak detection. The results indicate that PPGI can be a suitable solution for providing heart rate data derived from these indirectly post-traumatic stress states.