Facial Micro- and Macro-Expressions Spotting and Generation Methods

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***Abstract*— Long video datasets of facial micro-and macro-expressions remains in strong demand with the current dominance of data-hungry deep learning methods. We introduce SAMM Long Videos (SAMM-LV), a high resolution and high frame rate (200 fps) long video dataset containing micro-expressions (MEs) and macro-expressions (MaEs). We propose a ME and MaE spotting algorithm that takes advantage of the temporal differences of both expression types for detecting them simultaneously. Our method achieves F1-score of 0.126 in SAMM-LV and 0.062 in a low frame-rate (30fps) dataset, CAS(ME)2. To further increase the size of long video dataset, style transfer using reference guided image synthesis was introduced as an advanced image augmentation method (SAMM-SYNTH). We evaluate SAMM-SYNTH by conducting an analysis based on the facial action units detected by OpenFace.**

Keywords*— *Facial micro-expressions, spotting, generation, deep learning