

Mapping the dynamics of a smile to enable gender recognition

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This paper is concerned with the identification of gender from the dynamic behavior of the face. The dynamic of how men and women smile differs measurably, according to new research, enabling artificial intelligence to automatically assign gender purely based on a mile [2].

As shown in Figure 1, this research group created a computational framework for smile dynamics. There are the key components of framework for the analysis of the dynamic of a smile. In order to research the difference from the dynamic movement of the smile between men and women, the team mapped 49 landmarks on the face, mainly around the eyes, mouth and down the nose [1]. Following the Figure 2. The positions corresponding to each point are as shown in Table 1.

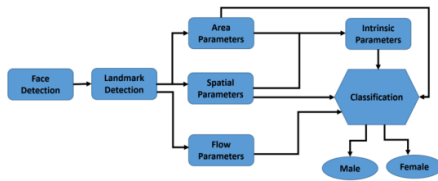


Figure 1: Block diagram showing the key components of the computational framework for automatic analysis of smile dynamics.

The result of the study found that women's smile are more expansive and women definitely have broader smiles, expanding their mouth and lip area far more than men [2]. And this research have unique meaning that depend on a dynamic that is unique to an individual and would be very

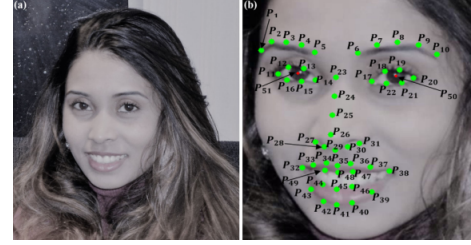


Figure 2: Automatic landmark detection. a An example input face, b landmarks detected using the CHEHRA model.

Table 1: Description of the geometric distances from which dynamic spatial parameters are derived

Distance	Description	Landmarks
d_1	Mouth corners	P_{32} to P_{38}
d_2	Upper and lower lip	P_{45} to P_{48}
d_3	Mouth to nose (left corners)	P_{32} to P_{27}
d_4	Mouth to nose (right corners)	P_{38} to P_{21}
d_5	Mouth to eye (left corners)	P_{32} to P_{11}
d_6	Mouth to eye (right corners)	P_{38} to P_{20}

difficult to mimic or alter.

Reference

- [1] Hassan Ugail *et al.*[2]. Is gender encoded in the smile? a computational framework for the analysis of the smile driven dynamic face for gender recognition. *The Visual Computer*, March 2018.
- [2] University of Bradford. Is your smile male or female? mapping the dynamics of a smile

to enable gender recognition. *ScienceDaily*,
March 2018.