

Modifying a face to make it more memorable or forgettable

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Upon a single glance at a new face, we are wired to automatically tag the person with physical, personality, social and emotional attributes. Importantly, some novel faces leave a lasting impression that persists in your memory. Knowing that face memorability -the degree to which a face photograph is remembered or forgotten - is an intrinsic attribute of the image, consistent across different observers (Bainbridge, JEP:G 2013), here we present and test a shape-deforming face model that subtly modifies natural photos of faces towards enhancing or reducing their memorability (Khosla, ICCV 2013). After learning from local landmarks and computer vision features, the model is able to automatically predict the memorability score of a novel face. Then, given a specific photo, the model can synthesize novel versions of an individual's photo along a memorability axis, while keeping other attributes (gender, age, emotion, attractiveness and identity) constant. In two crowd-sourcing visual memory experiments run with separate sets of people, observers are shown a sequence of individual images, for a second each, which have been manipulated along the axis of memorability, unbeknownst to them. Each experiment contains one version of a face, made either more or less memorable. Some faces are repeated after a few minutes in the sequence and observers are asked to press a key whenever they recognize a face they saw before. Memory performances show that the more memorable faces are recognized more often than the less memorable ones in 75% of the cases ($p < 0.0001$). This difference is found along the whole spectrum of memorability scores. Our findings demonstrate that memorability is a facial trait that can be manipulated like age or emotion, changing the whole face in subtle ways to make it look more distinctive and memorable, or more typical and forgettable. Additional details at <http://facemem.csail.mit.edu>.

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