Separation of texture and shape in images of faces for image coding and synthesis.

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Human faces differ in shape and texture. Image representations based on such a separation have been reported by several authors [for review, see Beymer and Poggio, (1996)]. This paper investigates such a representation of human faces based on a separation of texture and two-dimensional shape formation. Texture and shape were separated using pixel-by-pixel correspondence between the different images, which was established through algorithms known from optical flow computation. The paper demonstrates the improvement of the proposed representation over well established pixel-based techniques in terms of coding efficiency and in terms of the ability to generalize to new images of faces. The evaluation is performed by calculating different distance measures between the original image and its reconstruction and by measuring the time human subjects need to discriminate them.