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Eigenface : The image and the machine

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Eigenface: The image and the machine

The Berkeley Conference on Precarious Aesthetics
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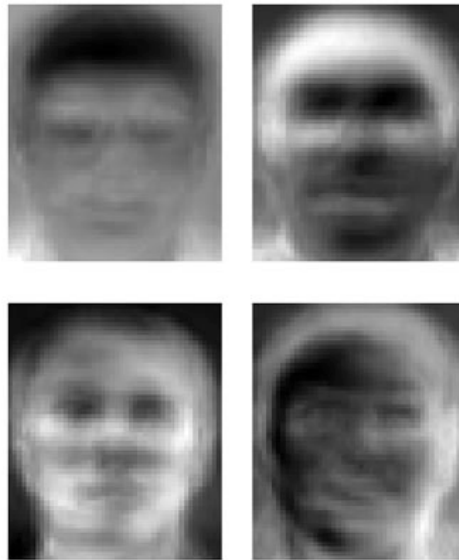


Fig. 1 Eigenface. ©AT&T Laboratories, Cambridge.

Abstract

Contemporary applications of machine vision involve processes that often obscure human perception. An example is the use of biometrics, a family of advanced visual technologies, most often used at national border controls to identify and/or validate a person's legal and national status through a visual scanning of parts of the body. This paper examines a specific imaging process within biometric technologies, the automated facial recognition technique called eigenface through a relationship to aesthetic practices within art production. The technique of eigenface presents a paradox between clarity and obscurity, in its function to make concrete security risks within the geopolitical context of its use, while on the other hand, doing so through a process of visual abstraction.

Eigenface involves a process of flattening the physical topography of the human face through a spectral decomposition of light and shadow, rendering the image of the face completely blurred. This is then matched against a set of eigenface templates of so-called standardized face ingredients. The differentiation between the individual facial image and the templates is expressed in numerical values and entered into a database as a record of identification for the individual. In my paper, this process of revealing a form of clarity, i.e., the identification of an individual, through multiplicity is explored further through the motif of composite portraits within the aesthetic realm.

Of particular interest are the photographic experiments by Ludwig Wittgenstein done in the 1920s and the contemporary artwork *Delegations* by Ali Maiharbi. Wittgenstein, referencing

the composite portraiture technique of racial and ethnic identification of Francis Galton, referred to them as a 'picture of probability'.¹ Rather in an inverse approach to the concretizing function of both the eigenface and Galton's work, Wittgenstein saw all manners of possibilities to be represented in the fuzziness.² Maiharbi's work directly deals with eigenface through a deconstruction of the functional logic behind identity and identification politics associated with its application. He does so in the context of problematizing electoral representation in politics by producing eigenfaces of the viewer of his work, set against templates made from the faces of members of parliament.

Eigenface can be understood as a contemporary production of, what Vilem Flusser has termed, the technical image, which functions 'to make concrete' that which has become abstract.³ Positioned at the interface between human and machine vision, the eigenface image represents a paradox within contemporary modes of visualization, simultaneously countering and revealing human perception in the digital age.

¹ 'Wittgenstein's Camera', 5 July 2011, *University of Cambridge*,
<<http://www.cam.ac.uk/research/news/wittgenstein's-camera>>

² Jones, Josh, 'The Photography of Ludwig Wittgenstein', 22 November 2013, *Open Culture*,
<http://www.openculture.com/2012/11/photography_of_ludwig_wittgenstein.html>

³ Flusser, Vilem. 'Into the Universe of Technical Images', University of Minnesota Press, 2011, p. 15-16.