Multi-Scaling 3D Measurement of the Skin Face & Body

Jean-Jacques SERVANT
EOTECH*, Marcoussis, France

Keywords: 3DScanning, Skin ageing, Skin care, Depth, area, Volume, Ageing evaluation, Density,Stereometry, Fringe projection, Face & Body.

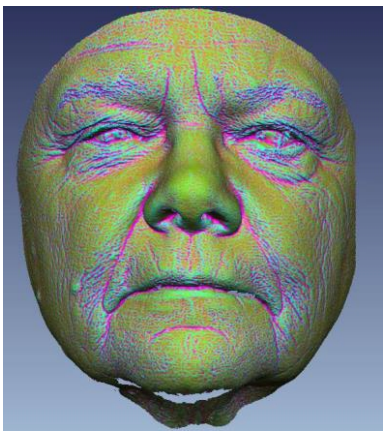
Introduction: Anti-ageing & Skin care product or treatment are acting at different level of the skin producing some changes which can be measured on the surface at different scale level. Aesthetical and cosmetics treatment produce effects at very small scale on the skin from micron to millimetres and wish to market effects which are related to the eye perception and in this case the scale is more in the millimetre to meter range.

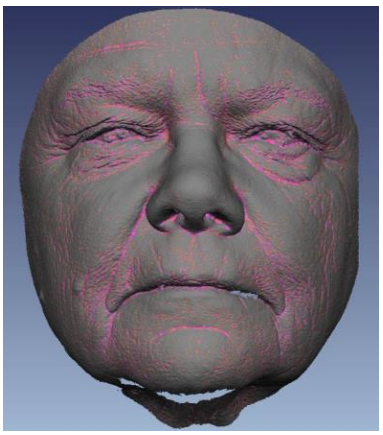
Objectives: The technology of 3D scanner improved in the past years to provide high resolution measurement on a larger scale. It becomes interesting to compare measurement which can measure locally to assess wrinkles , fine lines and skin texture while assessing as well the full face perception looking at most of wrinkles, fine lines & folds but also to shape and volume changes.

Methods: New generation of 3D scanner technology combine the well-known fringe projection technique with stereometry. This overcomes some limitation due to Fringe projection itself and others from stereometry itself. It is possible to use high resolution camera (up to 16 Mpixels) and project fine fringes without problems.
Associated with a dedicated positioning bench, the 3D scanner can capture in a few shots the complete face or body part, merging left and right side and start analysing all well know areas of ageing on this face or body. Powerful algorithms will align, merge and extract all these areas automatically and calculate depth, length, volume, areas and more. New algorithm can also provide unique evaluation of fines line, wrinkles and folds perception by given a density of these features on the face or body.

Results: Studies were conducted using different resolution of the scanner. Results will show that multiple areas on the face can be addressed from the same measurement while the sensitivity of the new algorithm over the age show a new way of assessing wrinkles, folds and fine lines. We will illustrate also the capability of this multi-Scaling scanner to address morphology changes on face and body parts like Leg, haunch etc..

Conclusions: MultiScaling 3D scanner open new possibilities to address local and global evaluation of the skin ageing sign on the face and body part. New algorithm also open ways of evaluating cosmetics efficacy, closer to perception. Sensitivity of these technologies is enough to see small changes, relevant from cosmetic effect.





* http://www.eotech-sa.com