Facial Imagery BMI Algorithm correlates with Normal and Overweight Measured BMI

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BACKGROUND
Identifying non-invasive and quick ways to measure an individuals Body Mass Index (BMI) is useful in research and health care. BMI is a global measure used to determine health of an individuals and it’s utilization is widely accepted. However, because taken an individual’s weight is a sensitive matter, a better and more efficient method is needed.

OBJECTIVE
The objective of this research was to determine a better method for capturing BMI of an individual. Through a facial photograph, researchers would determine if an algorithm could determine BMI.

METHODS
Sample of 1,210 young adults, as a part of a larger study, with a facial image and objective height and weight were used for analysis.

- **Measured BMI (mBMI)** was calculated by weight in kilograms divided by height in meters squared
- **Facial BMI (fBMI)** was measured through
  - Algorithm formulated to identify points on each face located in LWen and G-D. Guo, in *Image and Vision Computing*, Vol. 31, Issue 5, pages 392-400, 2013. Given the detected facial landmarks 20 facial points are used as the features to characterize the facial fatness. The learned function can then be used to compute the BMI for each test face image.

CONCLUSION
This method designed by researchers has the capabilities to identify BMI of individuals rather closely. Healthy young adults or those within the healthy range of BMI, the facial imagery procedure could be used. However, the algorithm is less sensitive to the extreme BMIs of underweight and obese. Future work is being done on the algorithm with these facial images and a new cohort to improve sensitivity.