# The 3D photo worth a thousand winks

October 6 2015, by Rob Payne, Sciencenetwork Wa

Credit: AI-generated image (disclaimer)

Be it snoring, insomnia or nightmares, most people have sleeping issues.

While some of these can be difficult to diagnose, obstructive sleep apnea sufferers may soon be able to find answers through a simple 3D photograph.

This is thanks to a technique called dense correspondence, created by the

UWA Machine Intelligence Group, a shape analysis system which identifies and maps thousands of anatomical points on the human face.

The system allows participants' facial structures to morph, ensuring precise points of comparison.

With input from sleep study results, scientists will be able to determine what physical characteristics are associated with sleep apnea, and to what degree.

This should help sleep apnea sufferers, who wake up frequently each night due to disruptions in breathing caused by the walls of the throat closing off or collapsing.

By feeding their 3D photo into the program's algorithm, sufferers will be able to see if their craniofacial characteristics are to blame.

Speaking at a public lecture recently, UWA Associate Professor Ajmal Mian said absolute measurements are possible with 3D data.

"In 2D photos, linear distances cut through the features…and do not take the underlying morphology into account," he said

These absolute measurements involve geodesic distance calculations such as curvature and depth, allowing for volume calculation.

This is handy considering sleep apnea is associated with factors such as having a smaller jaw, weak (retruded) jaw, large tongue and thick neck.

## Sleep apnea consequences significant for sufferers

Director of UWA's Centre for Sleep Science Professor Peter Eastwood said the consequences of sleep apnea are profound for individuals and

the community.

"There's a huge surge in blood pressure when you wake up from an apnea," Prof Eastwood said.

"As a consequence of this blood pressure surge, the huge effort [to breathe] during sleep and intermittent changes in blood oxygen levels, a person has chronic hypertension.

"[And] an increased risk of cardiovascular disease, stroke, type-two diabetes and metabolic syndrome, and [they] are chronically sleep-deprived."

Extreme daytime tiredness has also been linked to depression and a three- to five-fold increased risk of traffic accidents.

"The most recent estimates of sleep apnea prevalence are about six per cent in middle-aged women and about 13 per cent in middle-aged men—and that's sleep apnea of a clinically significant level," Prof Eastwood said.

"The challenge for us is detection and diagnosis, because about nine per cent of people who have the condition are currently undiagnosed."

*This article first appeared on* ScienceNetwork Western Australia *a science news website based at Scitech.*

Provided by Science Network WA

Citation: The 3D photo worth a thousand winks (2015, October 6) retrieved 5 May 2024 from https://medicalxpress.com/news/2015-10-3d-photo-worth-thousand.html

This document is subject to copyright. Apart from any fair dealing for the purpose of private

study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.