AI model can diagnose obstructive sleep apnea

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A random forest (RF) model has similar accuracy to a support vector

machine (SVM) for differentiating patients with obstructive sleep apnea (OSA), according to a study published online Oct. 12 in the *Journal of Sleep Research*.

Bo Pang, from the University of California, Los Angeles, and colleagues examined whether using faster and less complicated machine learning models, including SVM and RF, with brain diffusion tensor imaging (DTI) data can differentiate OSA from healthy controls. Two DTI series from 59 patients with OSA and 96 controls were obtained using a 3.0-Tesla magnetic resonance imaging scanner. Mean diffusivity maps were calculated from each series using DTI data and were realigned and averaged, normalized to a common space, and used to conduct cross-validation for model training and selection and for prediction of OSA.

The researchers found that the RF model showed a classification accuracy of 0.73 for OSA and controls and an area under the curve (AUC) value on the receiver-operator curve of 0.85. Cross-validation showed comparable fitting for the RF model with SVM for OSA and control data (accuracy, 0.77; AUC, 0.84).

"OSA screening can be faster and less complicated by using brain diffusion tensor imaging data and machine learning. Such use of neuroimaging data and machine learning will allow for early OSA screening and intervention that can ultimately help to restore brain tissue changes and functions," the authors write.

More information: Bo Pang et al, Machine learning approach for obstructive sleep apnea screening using brain diffusion tensor imaging, *Journal of Sleep Research* (2022). DOI: 10.1111/jsr.13729

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