NEWS

Machine Learning Model Fills Gaps in Alzheimer's Diagnosis

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Study: Longitudinal Transfer Learning-based Machine Learning for Diagnosis and Prognosis on Mild Cognitive Impairment Patients for Alzheimer's Disease with Incomplete Multi-Modality Imaging Data

Key findings:
Researchers developed a novel transfer learning-based machine learning model to diagnose and prognose mild cognitive impairment (MCI) due to Alzheimer's disease (AD) with varying availability of imaging modalities from MRI, FDG-PET, and amyloid-PET.

Why it matters:
Early detection is key to slowing AD progression. Neuroimaging holds great promise to facilitate early diagnosis and prognosis of AD in its early stage, but there are gaps in available neuroimaging data.

The study results demonstrate that this machine learning model can assist in early diagnosis of AD from multi-modality imaging, even when some modalities may be missing.
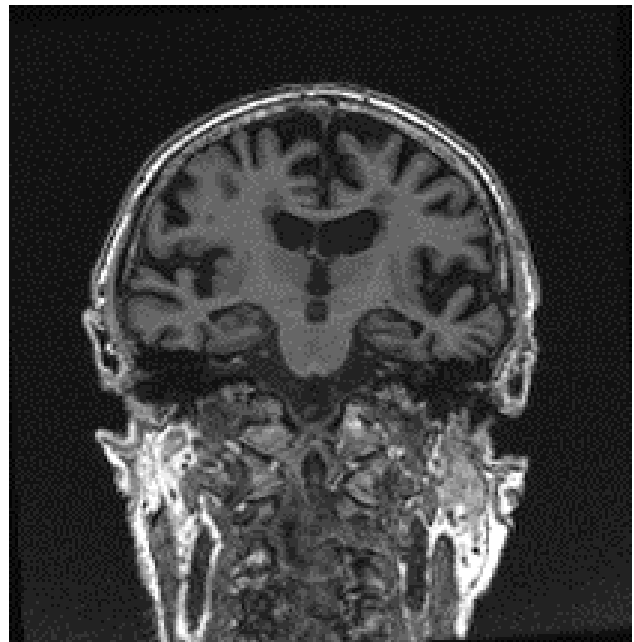
Background:
The study included 214 MCI patients from the Alzheimer's Disease Neuroimaging Initiative database: 97 MCI due to AD, 26 and 46 MCI converting to AD within 2 and 6 years, respectively. Patients were divided into four sub-cohorts based on the imaging available: MRI only; MRI & FDG-PET; MRI & amyloid-PET; and all three modalities.

The machine-learning model achieved much better accuracy than the competing model, using each cohort for the diagnosis and prognosis.

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"OUR RESEARCH PROVIDES A CLINICAL TOOL TO ASSIST PHYSICIANS IN DIAGNOSIS AND PROGNOSIS OF AD WHEN THE DISEASE IS STILL EARLY FOR THEIR PATIENTS, WHICH HAS TREMENDOUS CLINICAL BENEFITS."

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