# Improved prediction of brain age using multimodal neuroimaging data

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**Abstract:** Prediction of brain age using neuroimaging data and machine learning has recently drawn increasing attention, as it has the potential to serve as a biomarker for characterizing the typical brain development and neuropsychiatric disorders. However, few studies examine multi-modal imaging features derived from MRI, DTI as well as rs-fMRI for brain age prediction. In addition, several studies report that the predicted brain age is often underestimated for older subjects and overestimated for younger subjects. We examine this systematic bias and propose different approaches to correct for the bias. We also compare different machine learning approaches to integrate different combinations of multi-modal imaging features. Furthermore, we apply our proposed approach to adolescents with anxiety disorders to test whether altered brain development is observed and how the brain development is related to cognitive deficits.