**NiChart: A software tool for building machine learning oriented neuroimaging brain chart**

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Brain magnetic resonance imaging (MRI) has been widely adopted by studies of brain aging, neurologic disorders, and neurodegenerative diseases, which have collectively generated a tremendous data resource for understanding and quantitatively describing normal and pathologic brain aging. However, modest diversity and sample sizes of individual studies, as well as variations of MRI scanners and imaging protocols across studies, often limit the power and generalizability of results and derived models. We have developed the neuroimaging brain aging chart ([NiChart](https://neuroimagingchart.com/" \t "_blank)), a set of modular but integrated software tools for neuroimaging research including processing, harmonization, visualization and derivation and application of machine learning models for individualized multi-variate imaging signatures, based on a diverse harmonized dataset of 50,000+ diverse participants across 23 studies. To enhance accessibility, we also provide cloud access and software tools with a point-and-click graphical user interface. A plugin system allows addition of community-derived models of imaging signatures, enabling the dynamic enhancement and enrichment of NiChart with new dimensions of brain structure that are the focus of other studies. In this tutorial, we will introduce and show case different components of NiChart including multimodal imaging processing and harmonization, and discuss the methods behind the software.