

# Learning age-related chronic disease progression from cognitive measurements

*Monday, July 27, 2020 7:30 PM (1 hour)*

Cognitive impairment is one of the most prominent symptoms of age-related diseases such as Alzheimer's disease or Lewy body disease. Therefore, it is not surprising that cognitive impairment is one of the variables that is usually measured in longitudinal studies of Alzheimer's disease. However, if we look naively at the progression of cognitive impairment in a patient, we cannot obtain enough information of the progression of Alzheimer's disease in them. The reason of this mismatch is that cognitive impairment is an overlapping symptom caused by multiple chronic diseases and modulated by intrinsic and extrinsic variables.

Each age-related chronic disease, such as Alzheimer's disease, is characterized by a set of biological processes that can be measured by biomarkers. In recent years, multiple machine learning models have been proposed to predict cognitive impairment given the measurements of biomarkers of different chronic diseases. Nevertheless, measuring biomarkers for a large cohort in a longitudinal study is more complicated and more expensive than measuring cognitive impairment. This results in sparser biomarkers measurements for each patient. Therefore, there is the need for a model that reconstructs the biomarker progression of different chronic diseases from sparse measurements of biomarkers and the progression of cognitive measurements.

Our project looks for an interpretable and simple model, that can reconstruct the progression of different chronic diseases leveraging the mechanistic knowledge that is available in the literature.

**Primary author:** OROZCO BOHORQUEZ, Cindy Catherine (Stanford University)

**Presenter:** OROZCO BOHORQUEZ, Cindy Catherine (Stanford University)

**Session Classification:** Posters 1