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Structural neuroimaging as clinical predictor: a review of machine learning applications

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Abstract

In this paper, we provide an extensive overview of machine learning techniques applied to structural magnetic resonance imaging (MRI) data to obtain clinical classifiers. We specifically address practical problems commonly encountered in the literature, with the aim of helping researchers improve the application of these techniques in future works. Additionally, we survey how these algorithms are applied to a wide range of diseases and disorders (e.g. Alzheimer's disease (AD), Parkinson's disease (PD), autism, multiple sclerosis, traumatic brain injury, etc.) in order to provide a comprehensive view of the state of the art in different fields.

Keywords: neuroimaging, structural magnetic resonance imaging, machine learning, predictive modeling, Alzheimer, autism, multiple sclerosis, Parkinson, SVMs, ensembling, cross-validation.

1. Introduction

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