



## Ehsan Adeli Mosabbebi

Postdoctoral Research Fellow, Psychiatry

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### Bio

#### BIO

Before joining Stanford, I was a postdoctoral research fellow at the Biomedical Research Imaging Center (BRIC) in University of North Carolina, Chapel Hill, NC, and a research scholar at the Robotic Institute in Carnegie Mellon University, Pittsburgh, PA. I got my Ph.D. from Iran University of Science and Technology, in the area of computer vision and machine learning.

#### PROFESSIONAL EDUCATION

- Postdoctoral Research Associate, University of North Carolina at Chapel Hill , Machine Learning and Medical Imaging (2016)
- Doctor of Philosophy, Iran Univ Of Science And Technology (2013)
- Research Scholar, Carnegie Mellon University , Computer Vision (2012)

#### LINKS

- My homepage: <http://stanford.edu/~eadeli/>

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### Research & Scholarship

#### CURRENT RESEARCH AND SCHOLARLY INTERESTS

In a board outline, my research lies in the intersection of machine learning, computer vision, neuroimaging and computational neuroscience. Particularly, my research focuses on the investigation of different computational and statistical learning-based methods in processing both natural and biomedical images to extract semantics from the underlying visual content. Machine learning, statistics, signal and image processing, neuroscience, computer vision and neuroimaging have conventionally evolved independently to tackle problems from different perspectives. Occasionally, these concepts neglected each other, while they can offer complementary viewpoints. In the recent years, these fields have begun to intertwine, and it is increasingly becoming clear that we need to make use of multidisciplinary research to better process large-scale visual data. I consider my research interests and direction as located at the intersection of all the aforementioned fields.

Starting my position at the Biomedical Research Imaging Center (BRIC) in the University of North Carolina-Chapel Hill, my main research was focused on expanding my skillset and using my knowledge in machine learning and visual data analysis on the diagnosis of neurodegenerative diseases, and prediction of brain development throughout early years of life, based on neuroimaging data. Although neurodegenerative diseases manifest with diverse pathological features, the cellular level processes resemble similar structures. Therefore, data-driven machine learning methods can lead to great achievements and solve these problems accordingly. I have contributed to the critical studies on these diseases, including Parkinson's Progression Markers Initiative (PPMI) and Alzheimer's Disease Neuroimaging Initiative (ADNI). One of the goals of neuroscience and cognitive sciences is to understand how the brain works. Due to many different factors like technological limitations, this goal remains elusive. Over the past decade, remarkable advances in both hardware and software aspects have established new possibilities for understanding the brain.

Continuing my research at Stanford University, I believe my research advances computational science in identifying biomedical phenotypes that accelerate detection, understanding, and treatment of medical diseases and specifically neuropsychiatric disorders. Recently, I have started to use my knowledge and expertise in the multidisciplinary fields of machine learning and computational neuroscience to analyse brain images for gaining more insight to the human immunodeficiency virus (HIV) infection and alcoholism, along with their comorbidity. Each of these disorders carries liability for disruption of brain structure integrity. Furthermore, both HIV infection and alcoholism reduce health-related quality of life, and their co-occurrence is highly prevalent. However, few studies examined the potentially heightened burden of disease comorbidity, which often leads to cognitive impairments. I sought to create machine learning techniques to improve the mechanistic understating of their comorbidity effects in the brain.