

# Using Machine Learning to determine Gender from Brain MRI

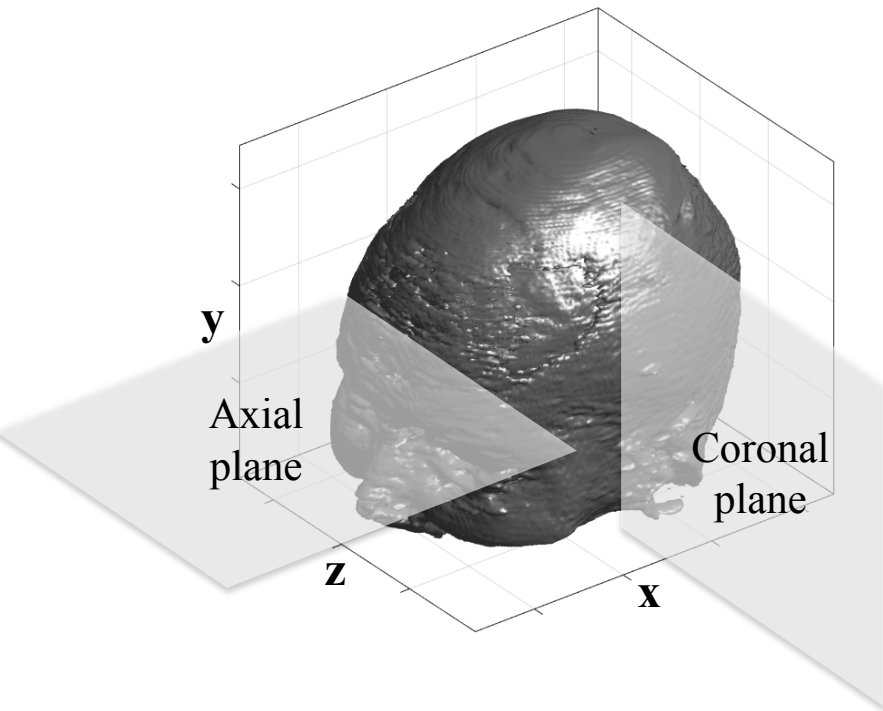
**Swathi M. Mula**

## Acknowledgements

The MRI brain images from healthy volunteers used in this paper were collected and made available by the CASILab at The University of North Carolina at Chapel Hill and were distributed by the MIDAS Data Server at Kitware, Inc.

# Axial and Coronal planes of 3D brain MRI

**3D brain volume**



Total healthy subjects = 87

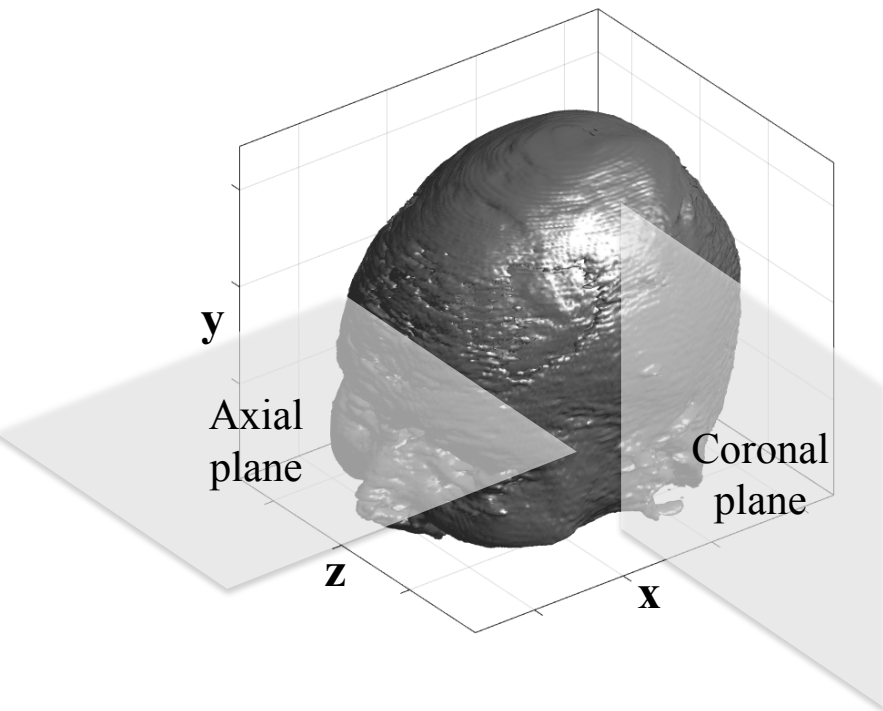
Total females = 49

Total males = 38

Age: 18-78 yr

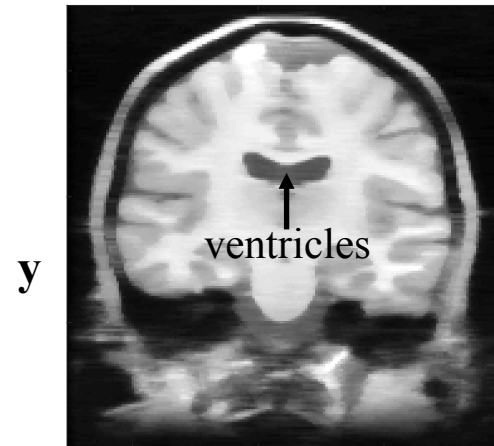
# Reduction of 3D volume to 2D region

**3D brain volume**

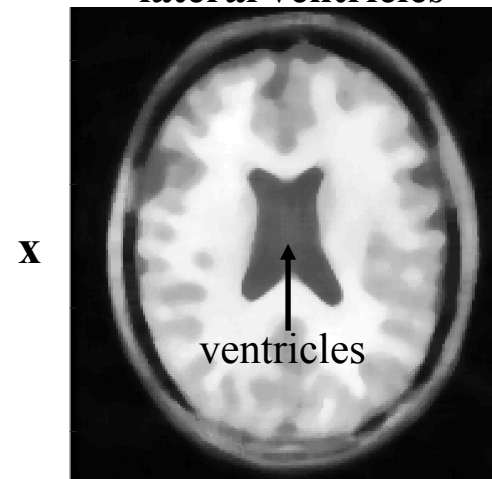


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**Mid-coronal plane**

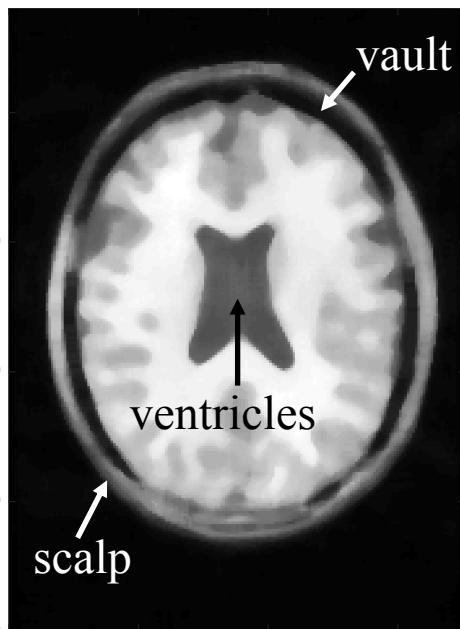


**Axial slice comprising lateral ventricles**

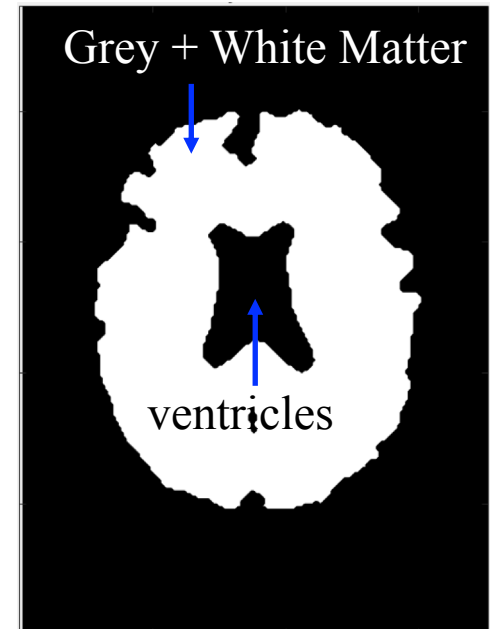
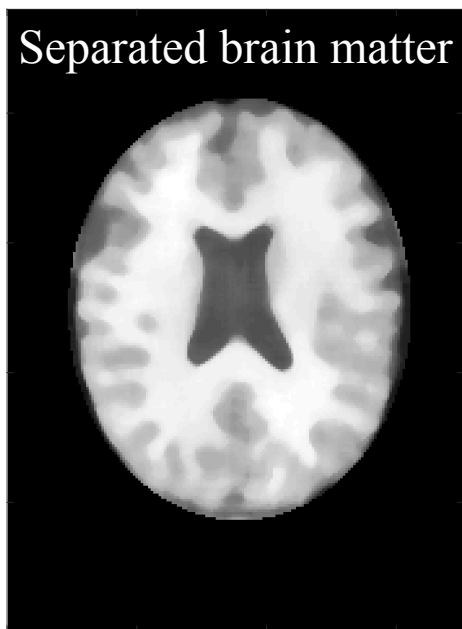


# Extracted the brain matter from scalp and vault

**Characteristic 2D  
slice of 3D image**



$$\text{Brain Area} = \text{Grey} + \text{White Matter} + \text{Ventricles}$$



Total healthy subjects = 87

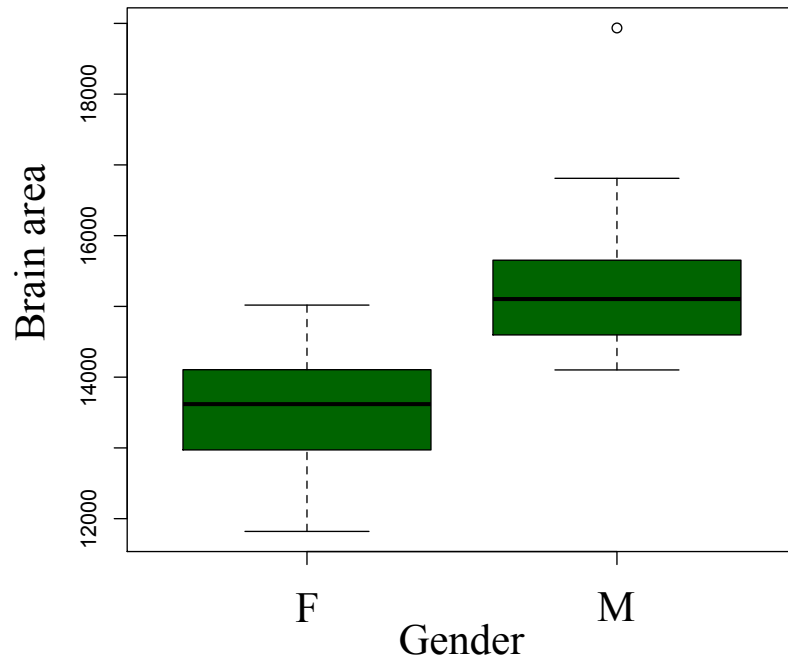
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# Males have higher brain area than females

## Box plot illustration of brain area by gender



## Logistic regression classifier

