

# Explainable AI and the brain

Characterizing heterogeneity in diverse clinical cohorts

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1. Theoretical background
  - a. Artificial neural networks
  - b. Explainable AI
2. Explainable AI and dementia
3. Explainable AI and brain age

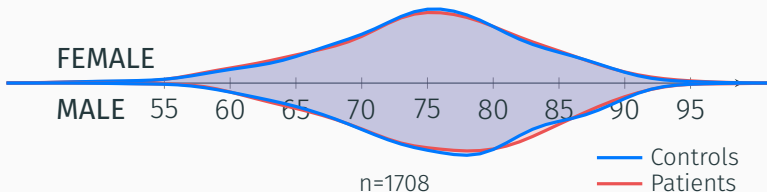
# Explainable AI and dementia predictions

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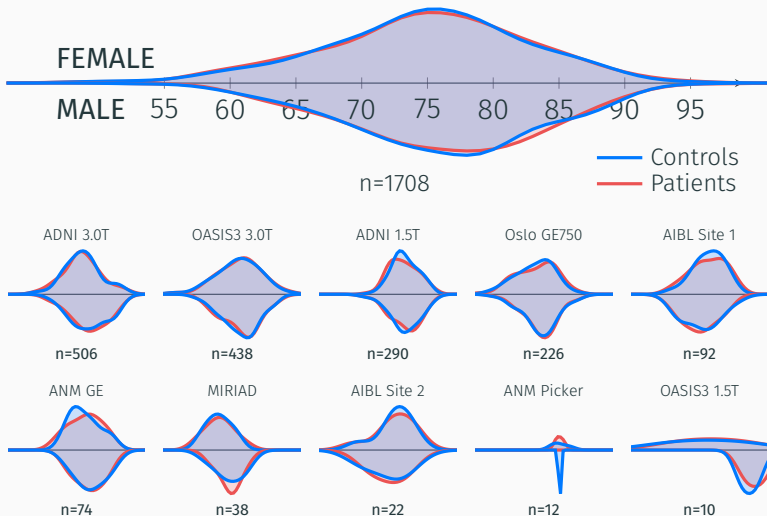


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# Explainable dementia classification: Dataset



# Explainable dementia classification: Dataset

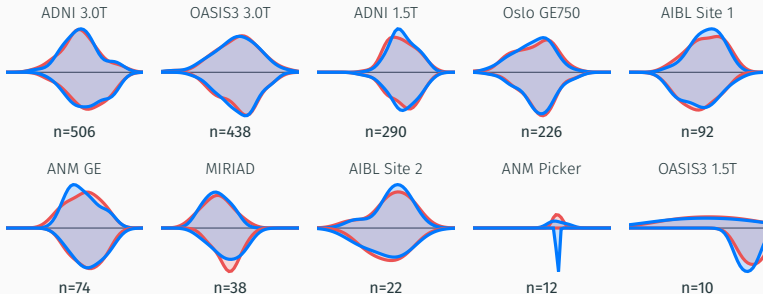


# Explainable dementia classification: Dataset

ADNI:  
Probable  
Alzheimer's disease

OASIS3:  
Dementia

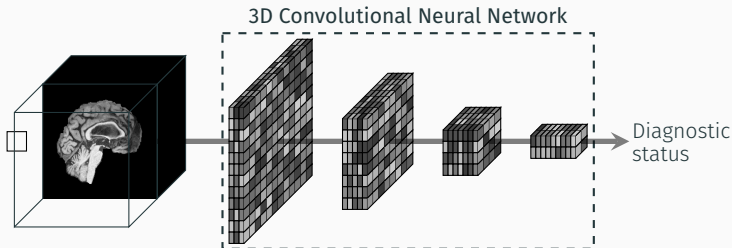
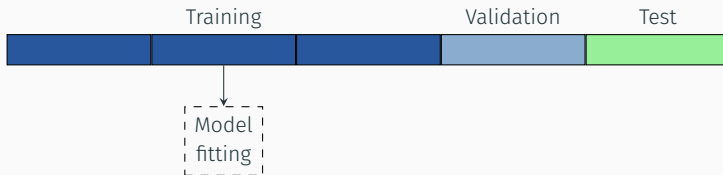
Oslo:  
Alzheimer's disease,  
Vascular dementia,  
Unspecified dementia



# Explainable dementia classification: Modelling

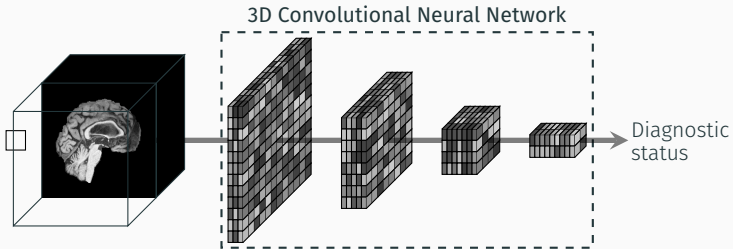
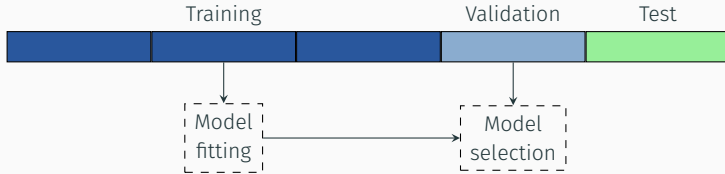


# Explainable dementia classification: Modelling

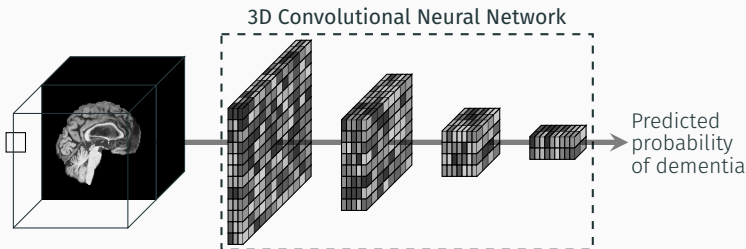
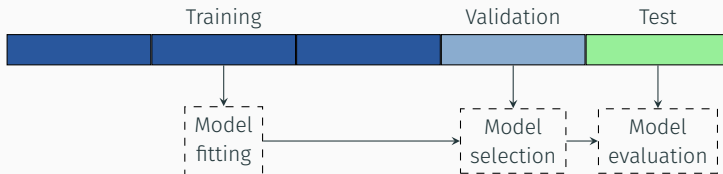




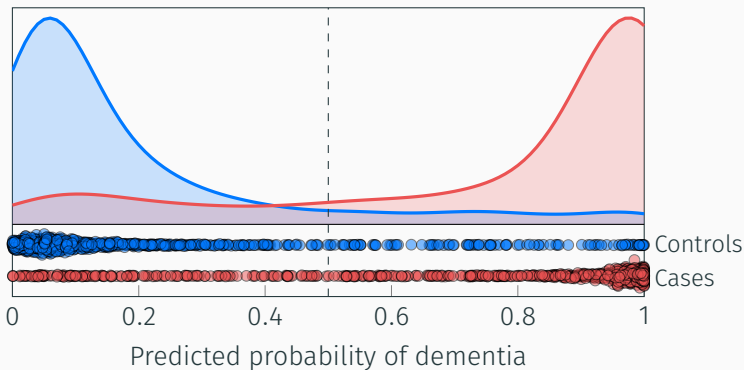
# Explainable dementia classification: Modelling



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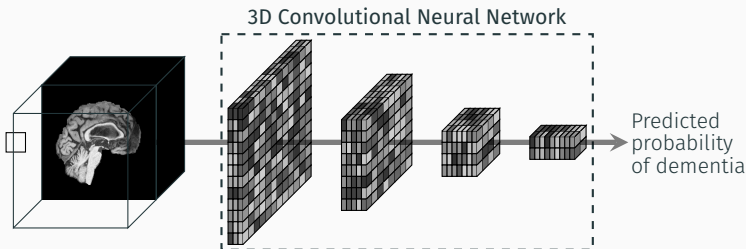
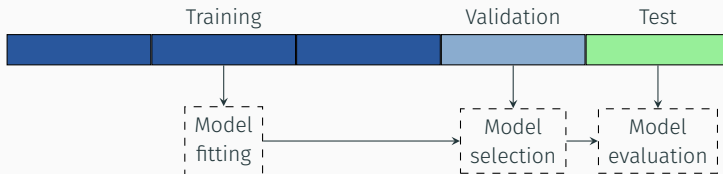
# Explainable dementia classification: Modelling



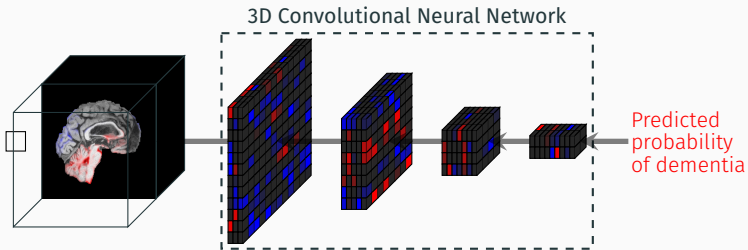
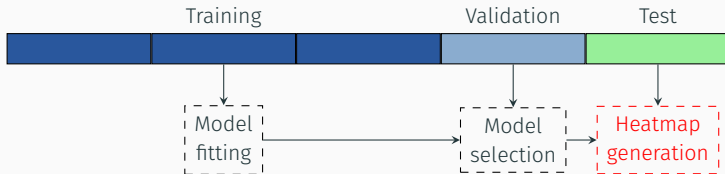
AUC=0.91, balanced accuracy=85%



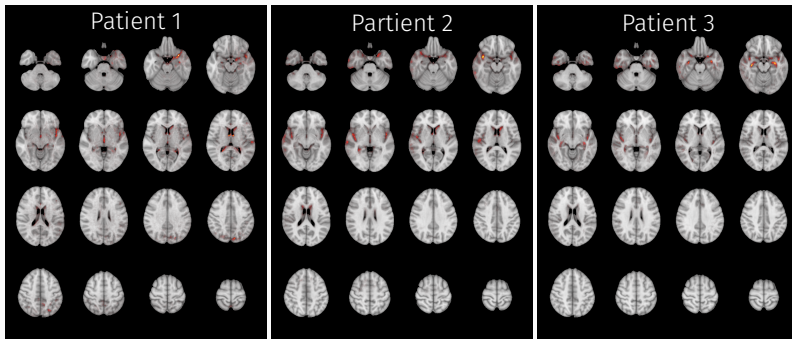
# Explainable dementia classification: Modelling



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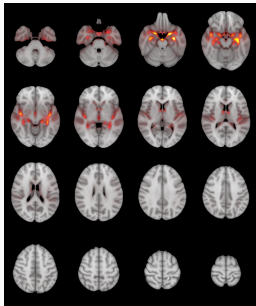


# Explainable dementia classification: Modelling



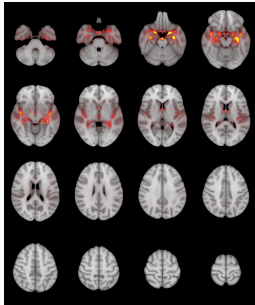
# Explainable dementia classification: Validation

LRP

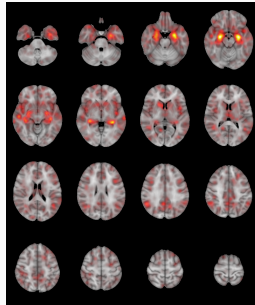


# Explainable dementia classification: Validation

LRP

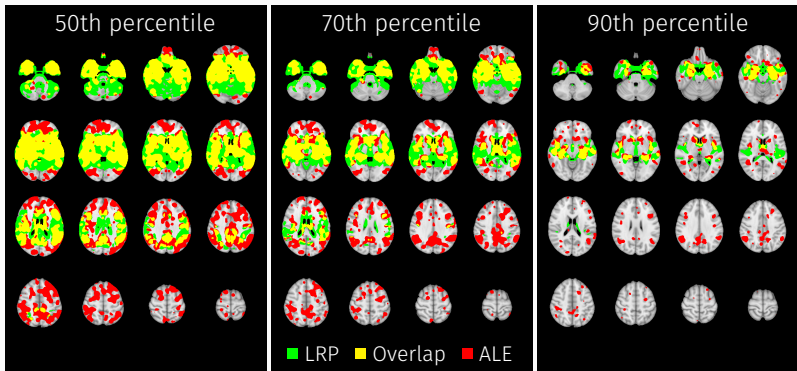


GingerALE

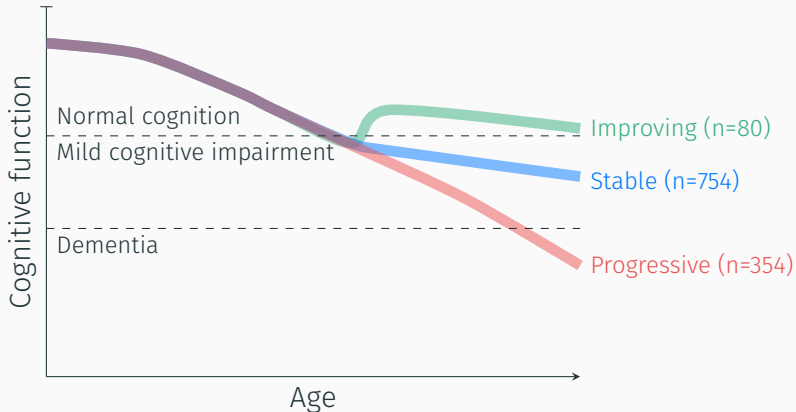




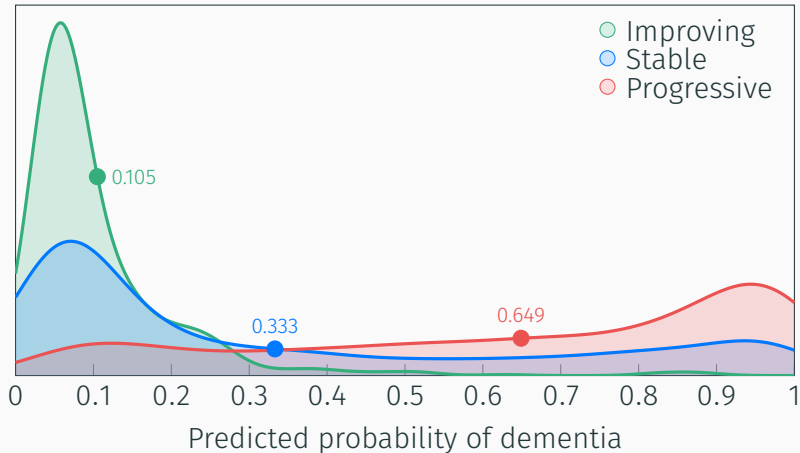
# Explainable dementia classification: Validation



# Explainable dementia classification: Application



# Explainable dementia classification: Application



# Explainable dementia classification: Application

