

# rsfMRI Brain Network Classification

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## Goals:

- Automate the classification of resting state fMRI brain network components



Figure 1: Standard labeling workflow

## Significance:

- Allows for more precise pre-operative brain surgery and prognosis predictions

## Results:

- Binary noise classifier for filtering
- Multi-class CNN for component prediction
- Pearson correlation hierarchy evaluation

Confusion Matrix of Multi-Class Post Noise Filtering

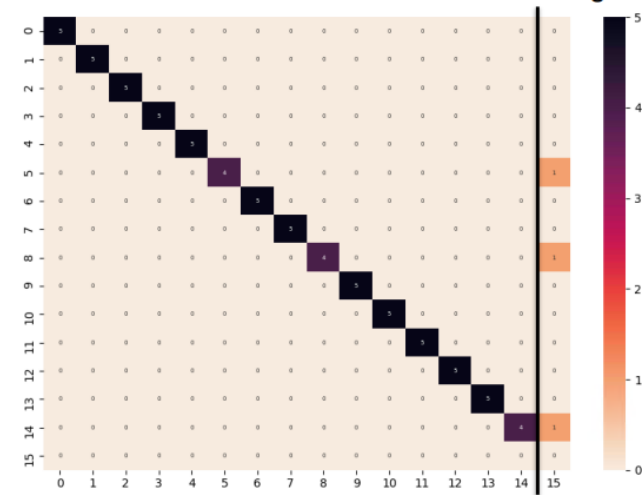


Figure 2: Confusion matrix of multi-class network assignment in group ICA study post noise filtering, with label 15 reserved for low confidence classifications

# Background

- Functional MRI
  - Measures brain activity by detecting blood flow
  - Resting state fMRI is used to explore the brain's functional organization
  - Brain is organized by grouped network components
- Hierarchical network relationships
  - Variation in data clustering and underlying patient physiology make labelling difficult
  - Incorporating hierarchical data can help

