Classifying Psychiatric Disorders

Joaquín Figueira,
Manfred Gónzalez,
Ahmet Çalış

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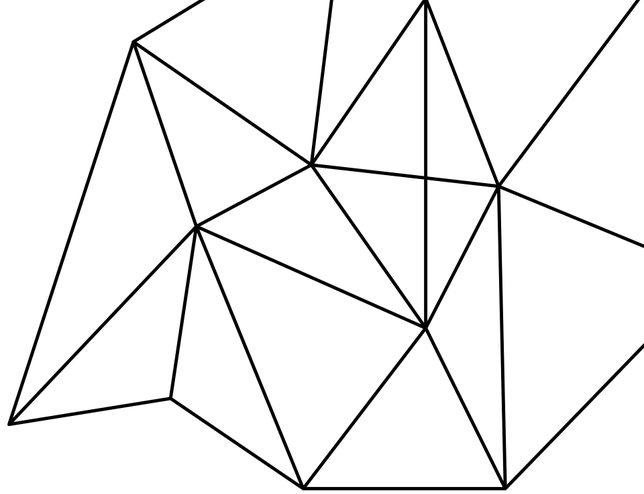
- Disorder Segmentation
- Latent Space

The traditional approach



Self-reported

Using PANSS scores

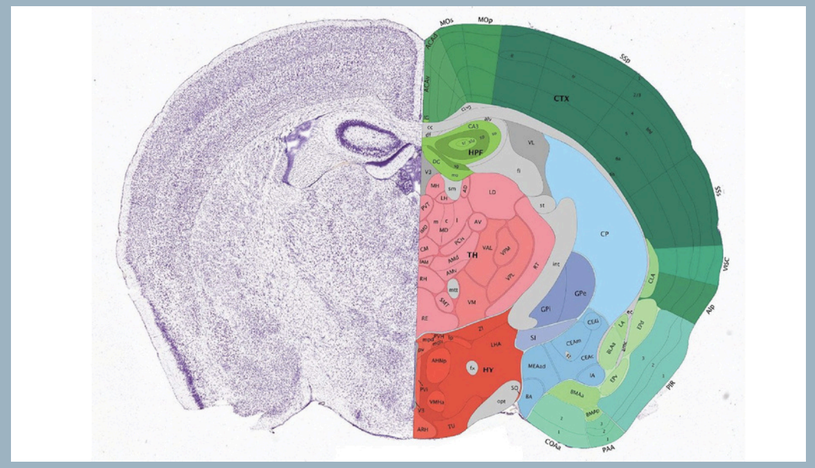
Behavior based

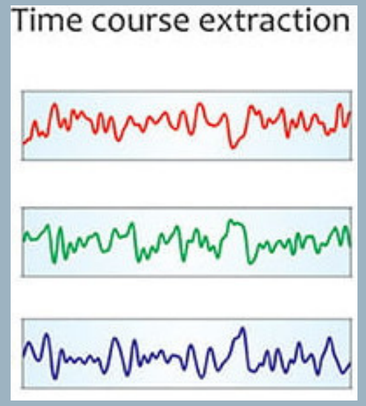
Evaluates the patients behavior and state of mind

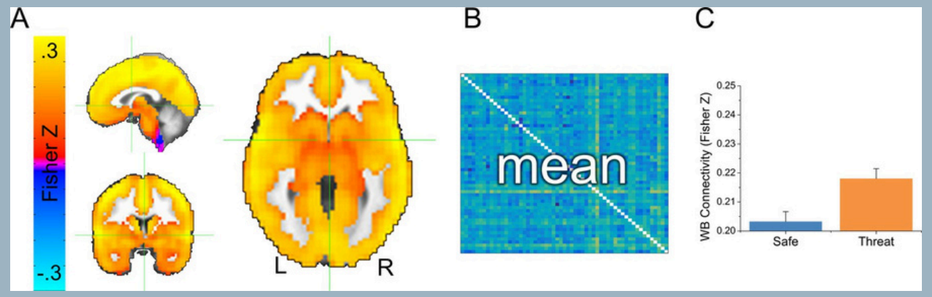
Molecular targets

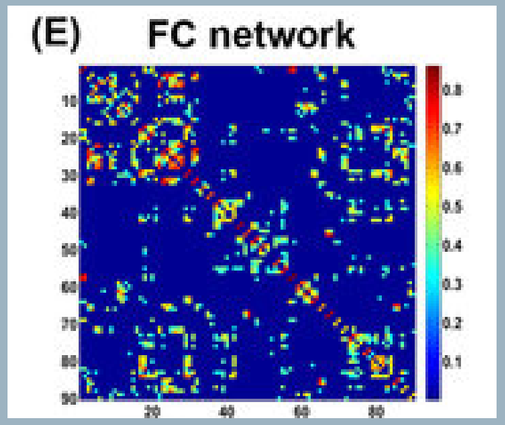
No way of mapping diagnosis with precise molecular target.

The Data Pipeline

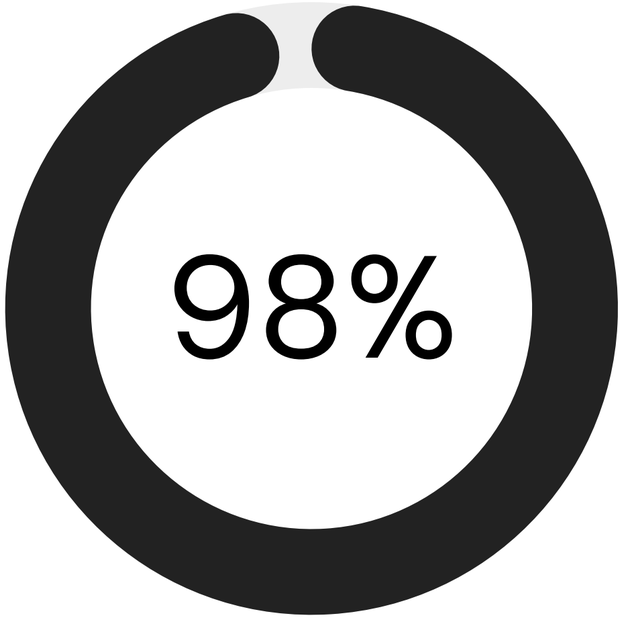




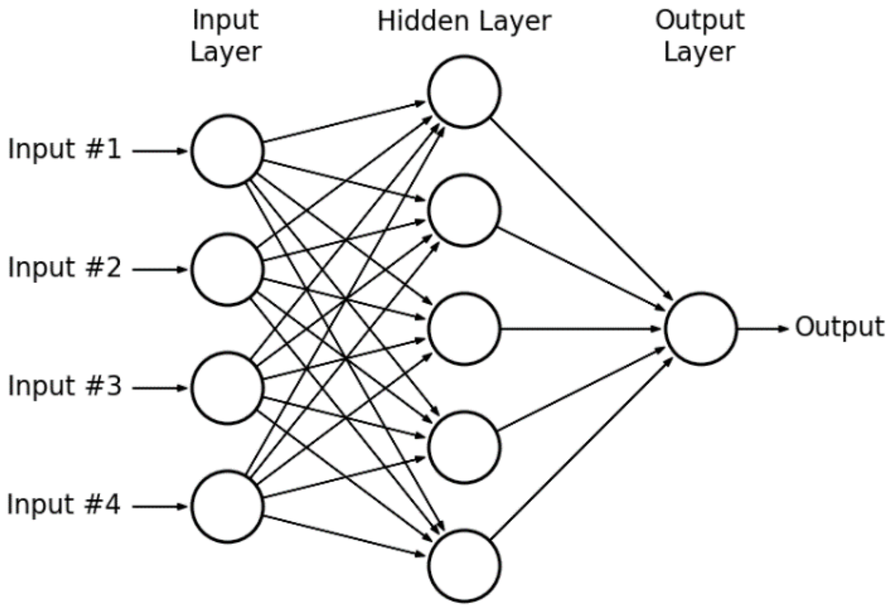




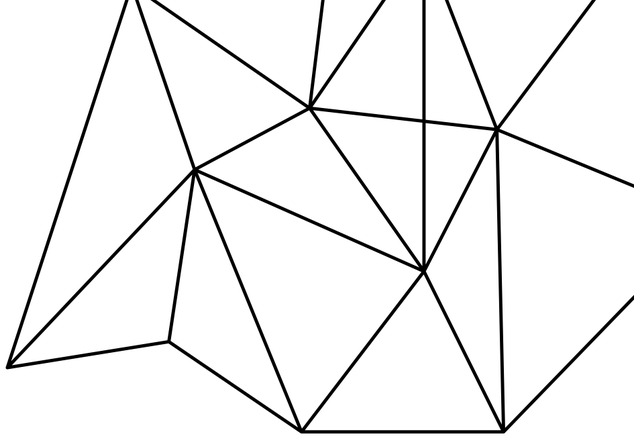
Disease Status Classification



XGBoost



Disease Classification



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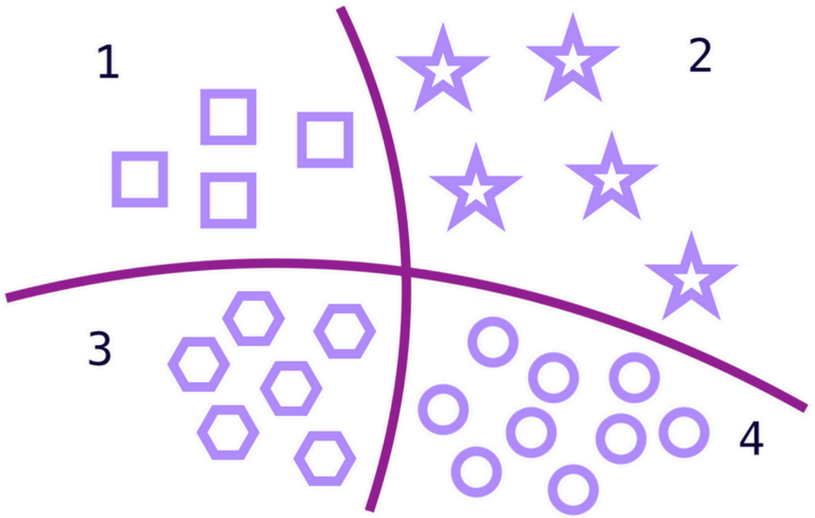
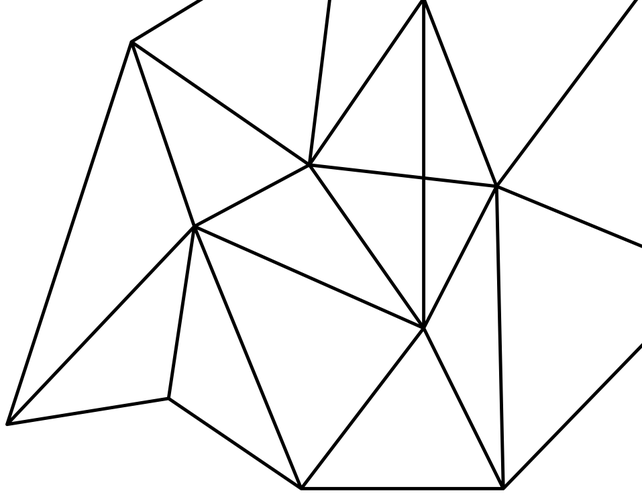
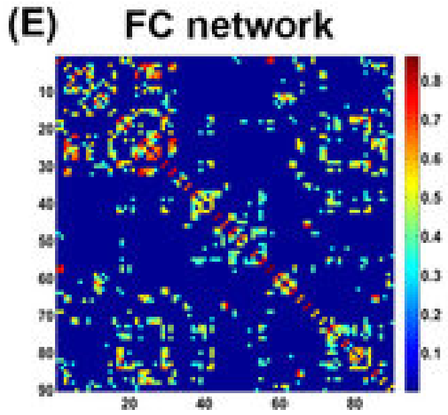
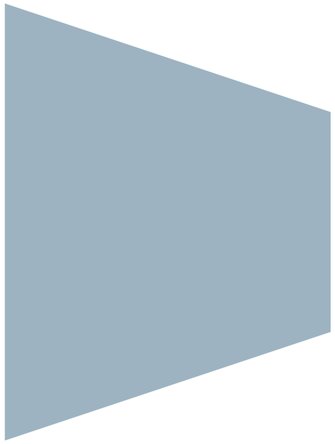


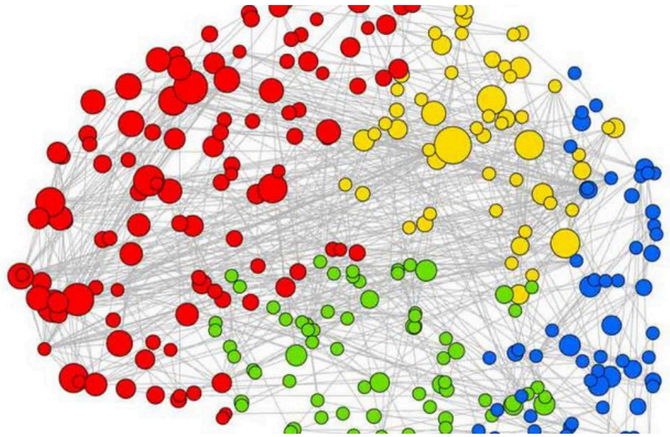
Network Analysis



KNN Filter



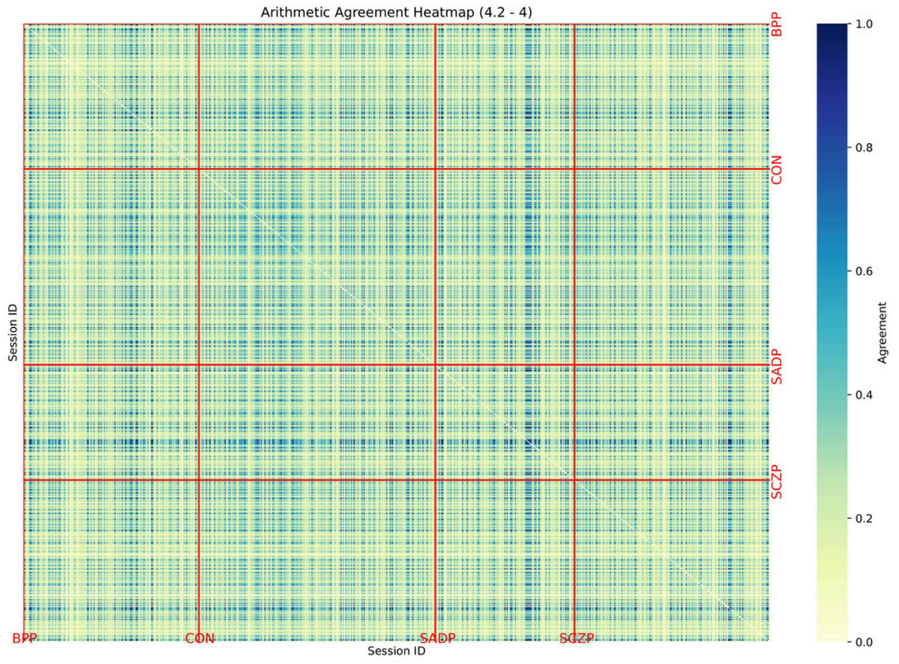




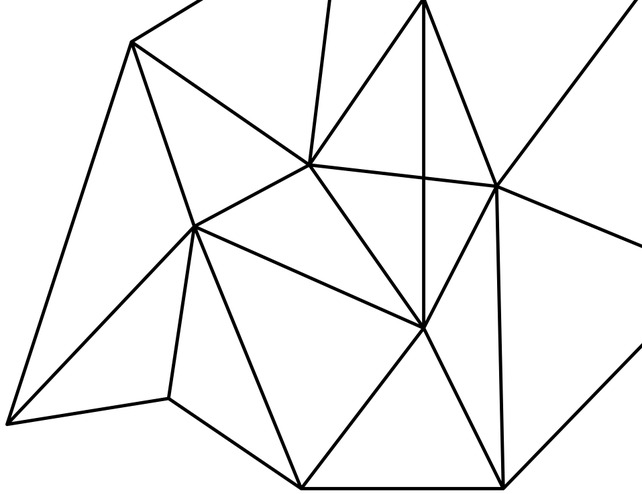
STD Filter

Network Analysis

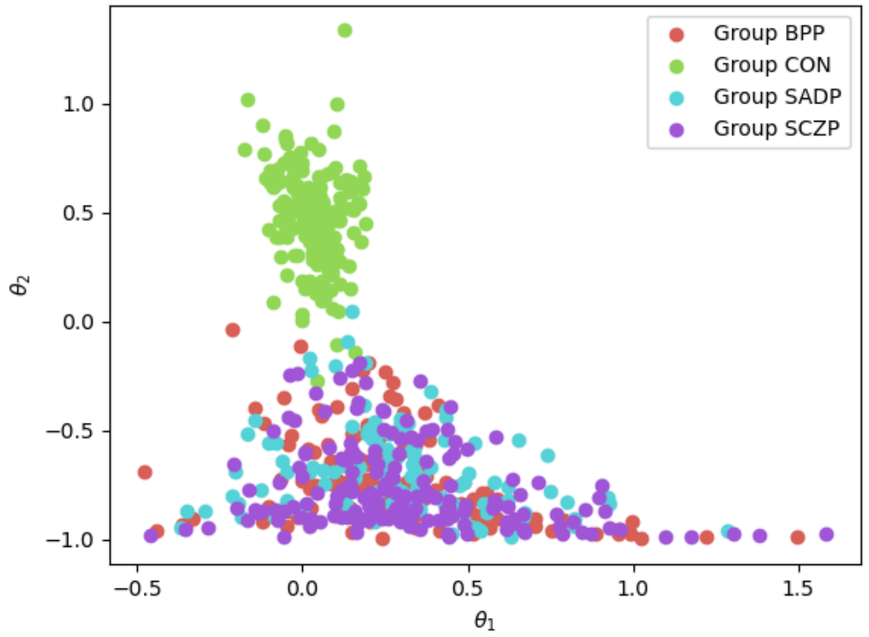
label	BPP	CON	SADP	SCZP
n	718.00	718.00	718.00	718.00
m	82137.07	78250.41	78832.08	84185.67
$\langle K \rangle$	228.79	217.97	219.59	234.50
Theoretical $\langle C \rangle$	0.32	0.30	0.31	0.33
$\langle C \rangle$	0.55	0.55	0.54	0.56
Theoretical $\langle PL \rangle$	1.23	1.23	1.23	1.22
$\langle PL \rangle$	1.69	1.71	1.70	1.68
$\log(n)$	6.58	6.58	6.58	6.58
$\log(\log(n))$	1.88	1.88	1.88	1.88
CC	717.83	717.88	717.84	717.89



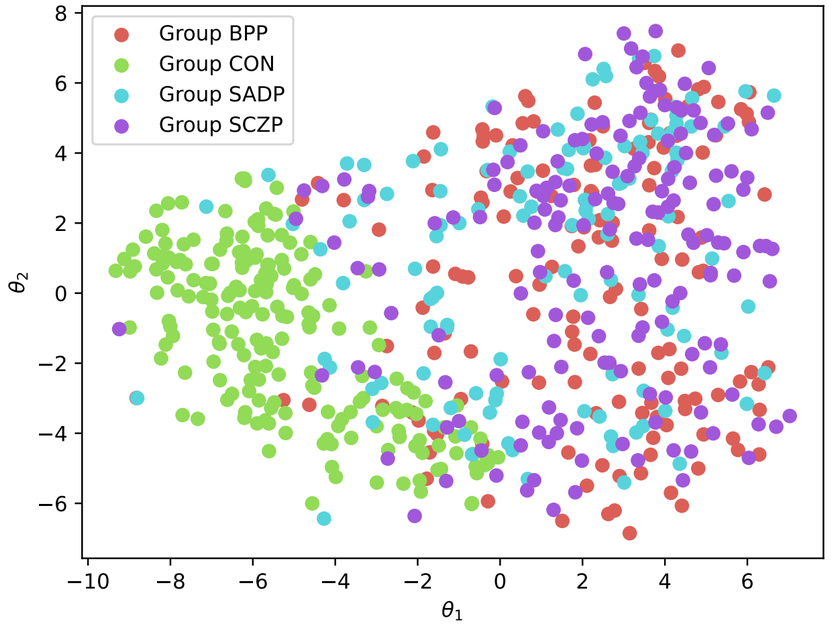
Latent Space Representation



DNN Embedding

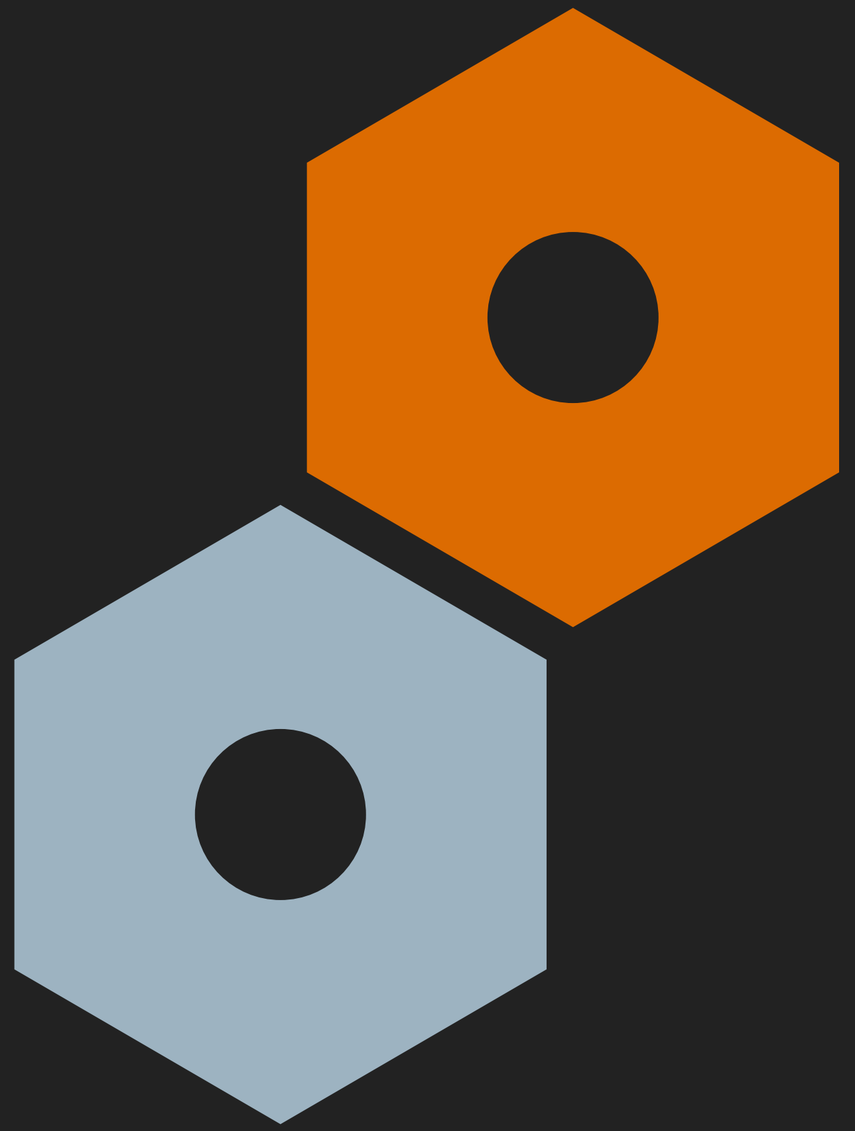


t-SNE



Conclusions

- We’re able to classify patient status
  - Latent space clustering
- Multiclass classification wasn’t successful
  - Dimensionality reduction
  - Methodology
  - Problem with Diagnosis



References