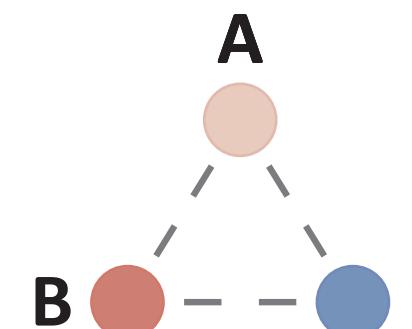


Pairwise vs High-Order Interaction

Brain Region Activity		
Region A	Region B	Region C
Active +	Inactive -	Active +
Inactive -	Active +	Active +
Active +	Active +	Inactive -
Inactive -	Inactive -	Inactive -

Pairwise Interaction

$$\begin{aligned} \text{corr}(A, B) &= 0 \\ \text{corr}(B, C) &= 0 \\ \text{corr}(A, C) &= 0 \end{aligned}$$



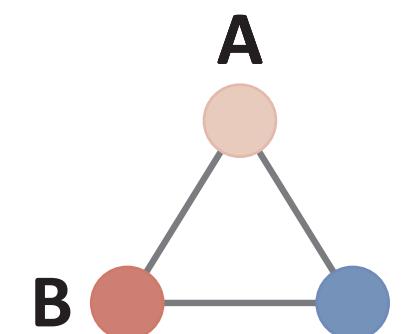
Quantification

Region A	[1, 0, 1, 0]
Region B	[0, 1, 1, 0]
Region C	[1, 1, 0, 0]

Network Model

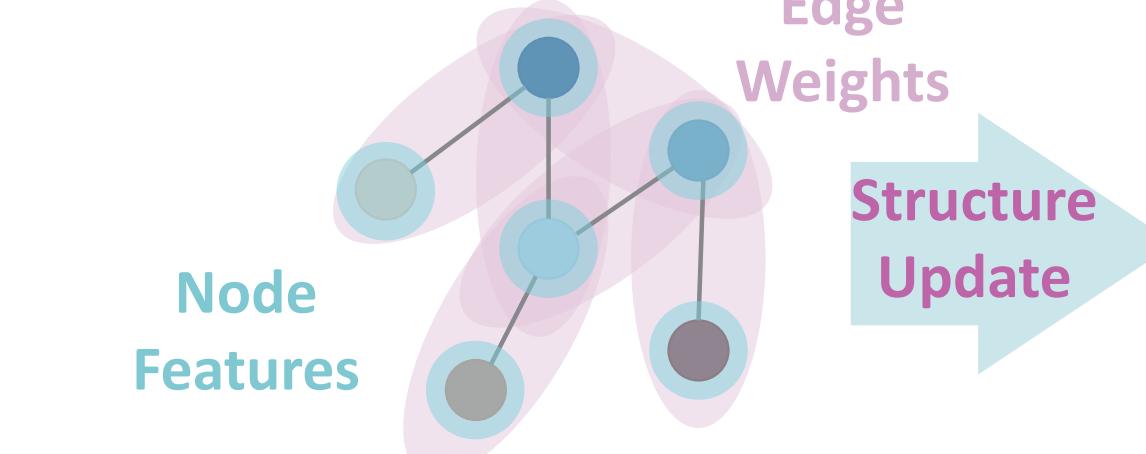
High-Order Interaction

$$C = \text{XOR}(A, B)$$

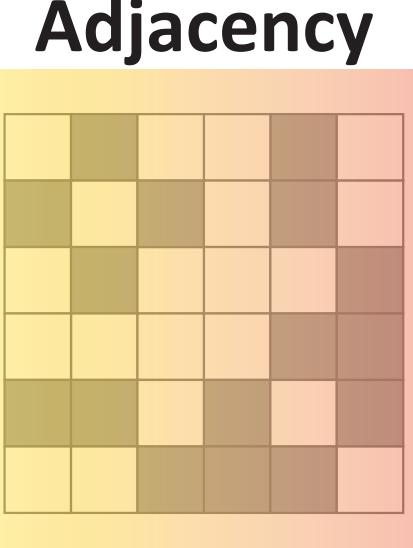
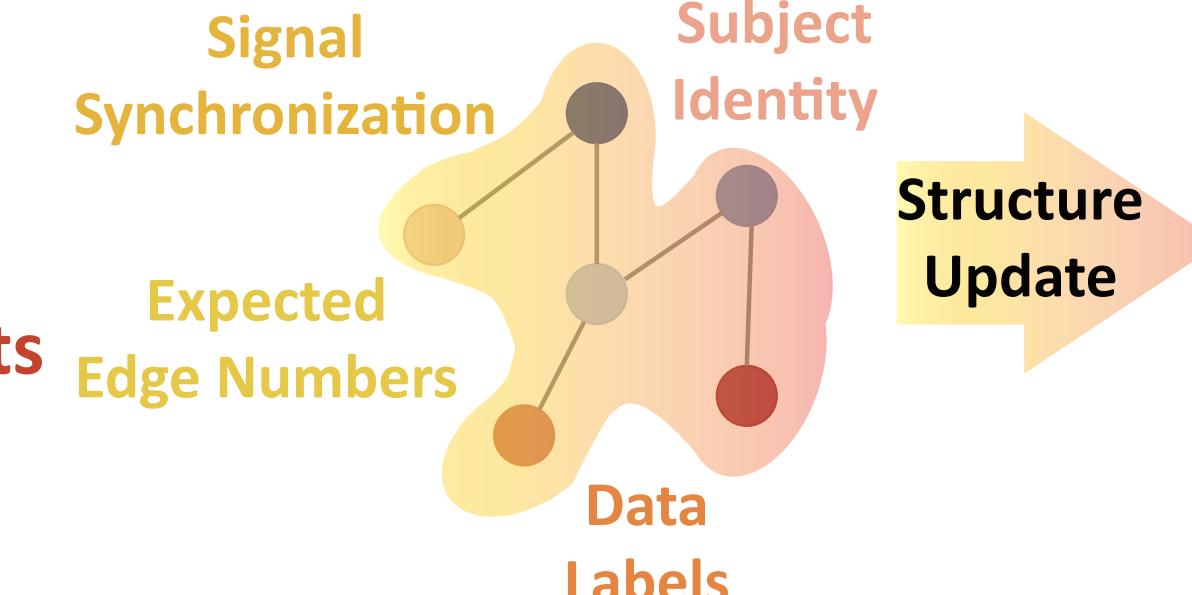


Local vs Global Constraints

Local Constraints

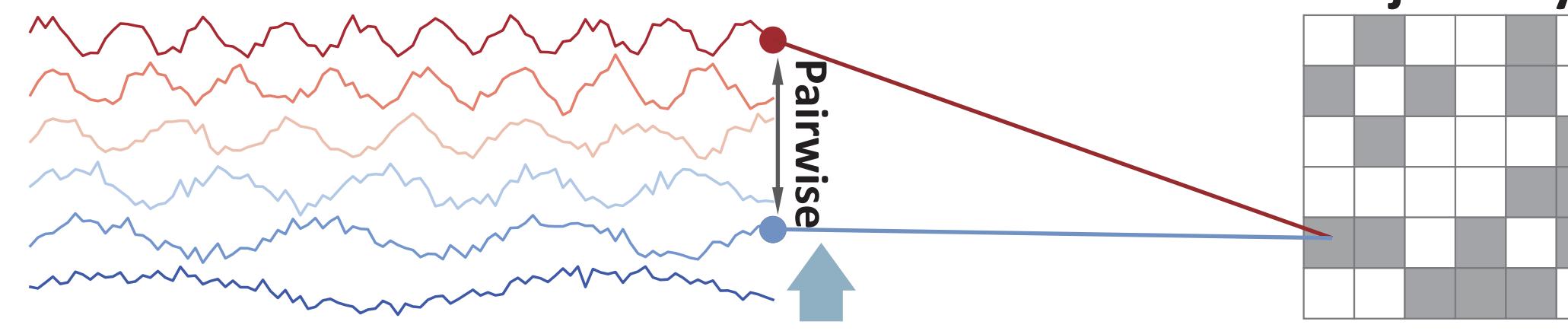


Global Constraints



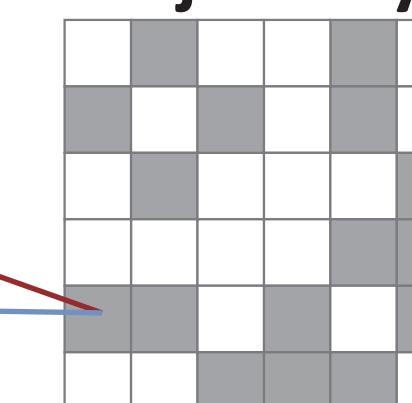
Previous: Pairwise Model

Multivariate Time Series



Local
Constraints

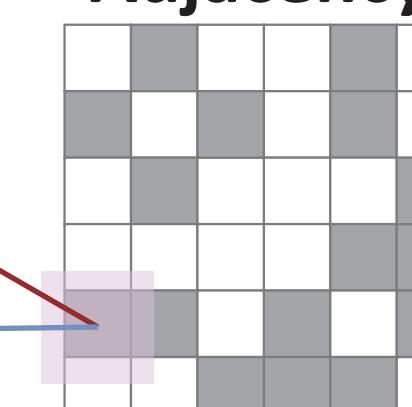
Adjacency



Local
Constraints

Feature

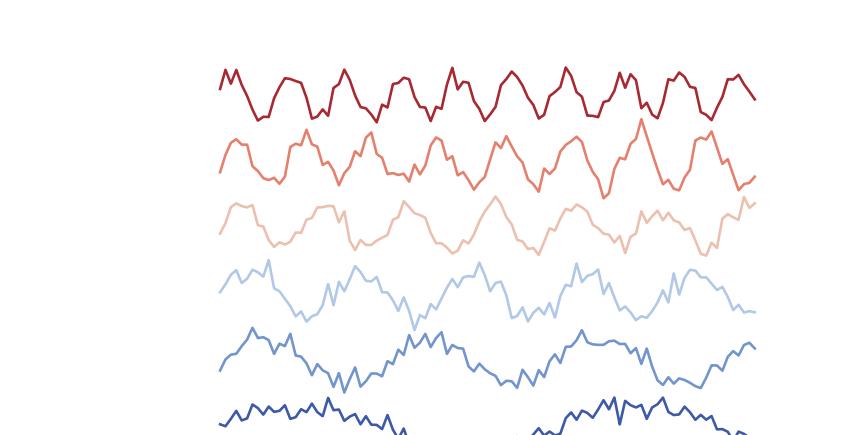
Adjacency



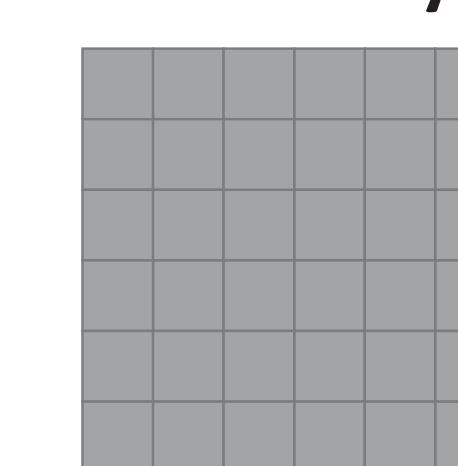
VS

Ours: Extract FBN under Global Constraints

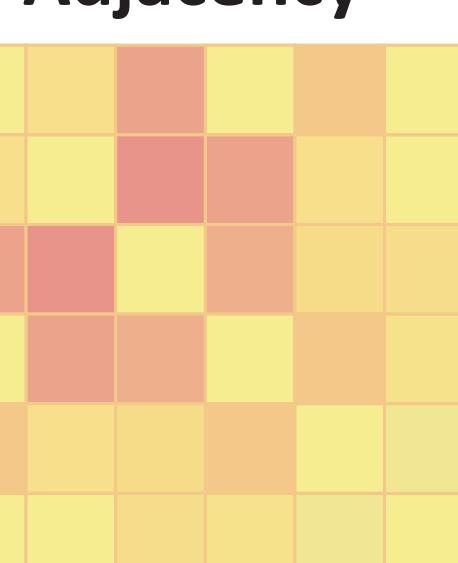
Multivariate Time Series



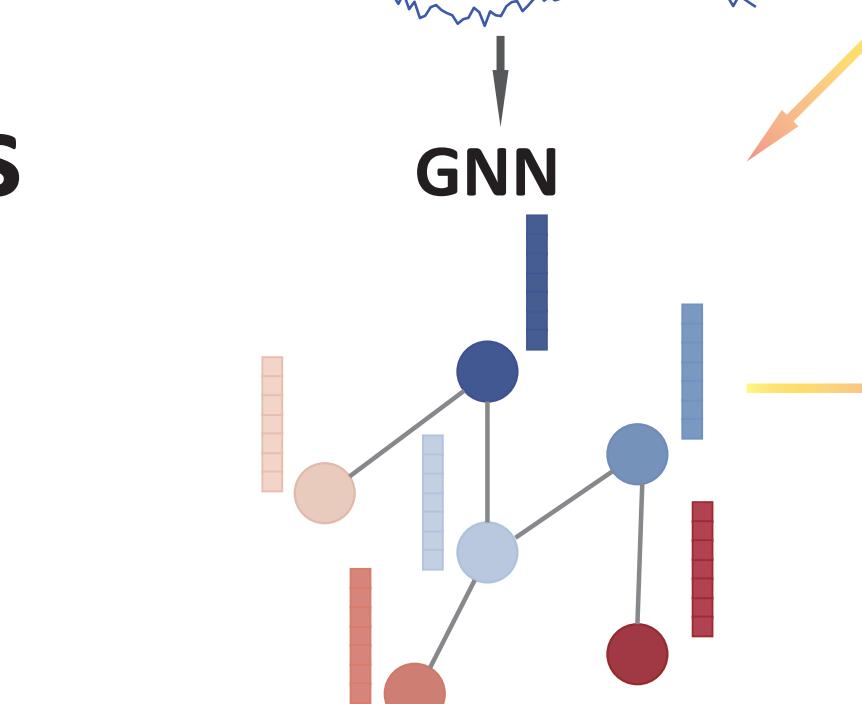
FBN Prototype



Adjacency



Holistic
Update



Local
Constraints

Global
Constraints