

Initial Neighbor Integrated Matrix

	Index Spot 1	...	Index Spot n
Gene 1	Z_{11}		Z_{n1}
...
Gene p	Z_{1p}		Z_{np}
Gene 1	\tilde{Z}_{11}		\tilde{Z}_{n1}
...
Gene p	\tilde{Z}_{1p}		\tilde{Z}_{np}
	Neighbor Spot 1	...	Neighbor Spot n

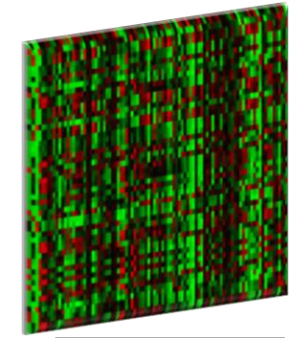
- ❑ Z: Downsampled UMI counts
- ❑ X: abundance of gene expression
- ❑ Y given Z: $Y = I(Z \neq 0)$
- ❑ $X = Z$, if $Y=1$; otherwise, $X = \text{NA}$

Neighbor Integrated Matrix

	Spot Pair 1	...	Spot Pair n
Gene 1	x_{11}		x_{n1}
...
Gene p	x_{1p}		x_{np}

Gene 1	y_{11}		y_{n1}
...
Gene p	y_{1p}		y_{np}
Gene 1	\tilde{x}_{11}		\tilde{x}_{n1}
...
Gene p	\tilde{x}_{1p}		\tilde{x}_{np}
Gene 1	\tilde{y}_{11}		\tilde{y}_{n1}
...
Gene p	\tilde{y}_{1p}		\tilde{y}_{np}

Gene 1 X / \tilde{X} : continuous nodes representing expression of Gene 1 on Index Spot/Neighbor Spot
Gene 1 Y / \tilde{Y} : binary nodes representing the on/off status of Gene 1 on Index Spot/Neighbor Spot
Blue/light blue: continuous/binary nodes corresponding to gene in Index Spot
Green/light green: continuous/binary nodes corresponding to gene in Neighbor Spot



Bootstrap
resample
of NIM

