?

$\hat{?}$

$\hat{?}$

$\hat{?}$

$\hat{?}$

$\hat{?}$

$\hat{y}$

$-x$
y

$\theta(x)$

θ

Θ

?

?

?

?

?

x, y

$\theta(x)$

y

θ

x

$\hat{?}$

$\hat{?}$

$\hat{?}$

$\hat{?}$

$\hat{?}$

$M =$

$13, \overline{616}$

$X :=$

$\{x_1, \ldots, x_M\} \subset{}^d$

$N =$

$1, \overline{143}$

$Y :=$

$\{y_1, \ldots, y_N\} \subset{}^d$

$d =$

15

$(m, n) \in$

$M \times$

$N :=$

$\{1, \ldots, M\} \times$

$\{1, \ldots, N\}$

m

n

y_n

x_m

y_m

y_n

$-x_m$
y_n

$\theta \in$

Θ

Θ

$\theta(x_m)$

y_n

??

x_m

y_n

$\hat{?}$

x_m

y_n

k

$x_1, \ldots, x_M$

$y_1, \ldots, y_N$

j

$x_1, \ldots, x_M$

$y_1, \ldots, y_N$

$1 \le$

$j \le$

d

k

$\hat{?}$

$\hat{x}_1, \ldots, \hat{x}_5$

k

$x_1, \ldots, x_M$

$k =$

$\hat{?}$

$\hat{y}_1, \ldots, \hat{y}_5$

k

$y_1, \ldots, y_N$

$k =$

$?$

$\hat{x}_1$

$\hat{x}_2$

$\hat{x}_3$

$\hat{x}_4$

$\hat{x}_5$

$\hat{x}_1$

$\hat{x}_3$

$\hat{x}_2$

$\hat{x}_4$

$\hat{x}_5$

$\hat{y}_1$

$\hat{y}_2$

$\hat{y}_3$

$\hat{y}_4$

$\hat{y}_5$

$1 \leq$
$j \leq$
d
?
$x_1, \ldots, x_M$
density
stats
R??
$y_1, \ldots, y_N$
??
M
N
$M/N >$
11
??

??

	2	6	10
1	0.646	1.39
0.886	1.02	1.48
0.964	1.21	3.08
0.805	1.70	4.11
1.24	1.86	4.32

	2	6	10
1	2.35	1.03
0.516	1.06	0.956
0.655	0.722	2.15
0.698	1.92	2.73
0.588	1.80	3.34

$_m RNA.png In black, kernel density estimates of the densities of mRNA gene expression for each level of polyQ length (Q80, Q...$
$and using a \log(1+$
$\cdot)$
y
$_m iRNA.png In black, kernel density estimates of the densities of miRNA gene expression for each level of polyQ length (Q80,$
$and using a \log(1+$
$\cdot)$
y
$\Omega :=$
$\{\omega \in$
$(_+)^M | \sum_{m \in M} \omega_m =$
$1\}$
$(M-$
$1)$
$\bar\omega :=$
$M^{-1} \mathbf{1}_M$
$\mathbf{1}_M \in^M$
$\omega \in$
Ω
$\Pi(\omega) :=$
$\{P \in$
$(_+)^{M \times N} | P\mathbf{1}_N =$
$\omega, P^\top \mathbf{1}_M =$
$N^{-1} \mathbf{1}_N\}$
$\mu_X^\omega :=$
$\sum_{m \in M} \omega_m \delta_{x_m}$
$\nu_Y :=$
$N^{-1} \sum_{n \in N} \delta_{y_n}$
$\omega,$
$X,$
P
$\Pi(\omega)$
$X \times$
Y
μ_X^ω
ν_Y
?
$X \times$
Y
$\mu_X^{\bar\omega}$
ν_Y
$c :$
$X \times$
$Y \to_+$
c
$c(x, y) :=$
$\|x-$
$y\|_2^2$
d
$C_{X,Y} \in^{M \times N}$
$(C_{X,Y})_{mn} :=$
$c(x_m, y_n)$
$(m, n) \in$
$M \times$
N
$\min_{P \in \Pi(\bar\omega)} \langle C_{X,Y}, P \rangle_F$
$\langle C_{X,Y}, P \rangle_F :=$
$\sum_{(m,n) \in M \times N} (C_{X,Y})_{mn} P_{mn}$
P
X
Y
?
P
$E(P) :=$