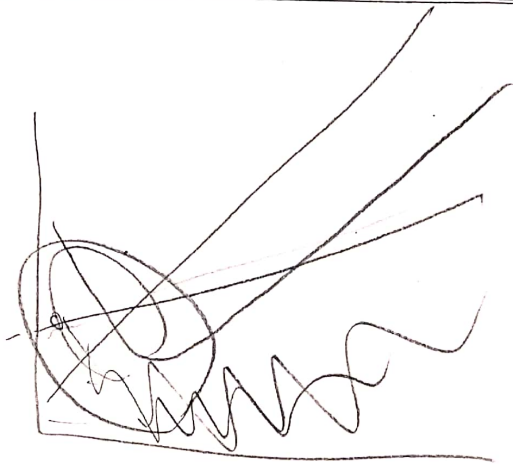


PRINT your student ID: _____

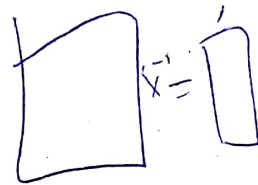
Chernoff Bound

⇒ What does info buy vs?

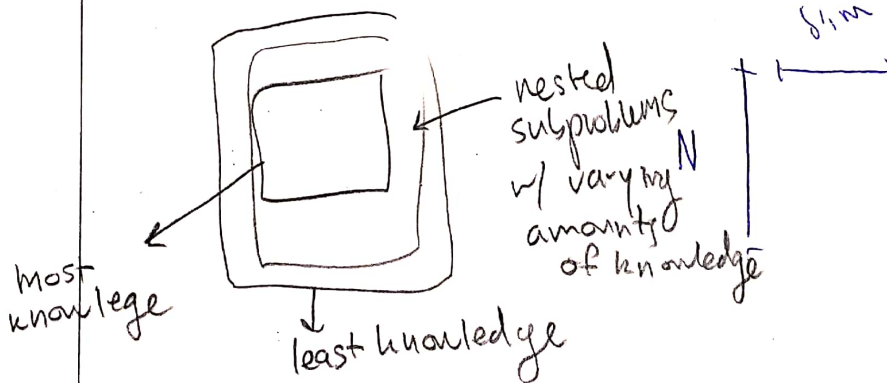
⇒ Optimal way of est λ ?

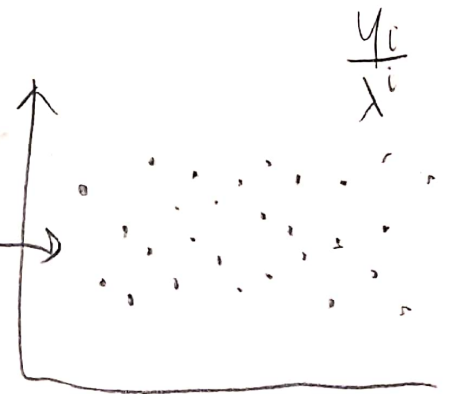
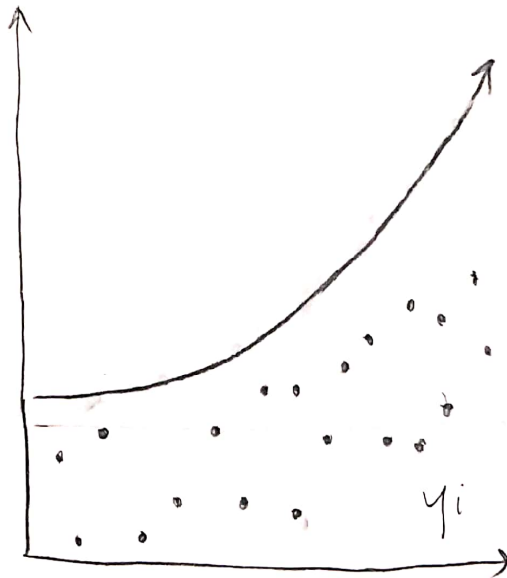


Try to see which knowledge is the most helpful and precisely how much



Is least squares optimal for estimating the eigenvalue? (can we prove this?)





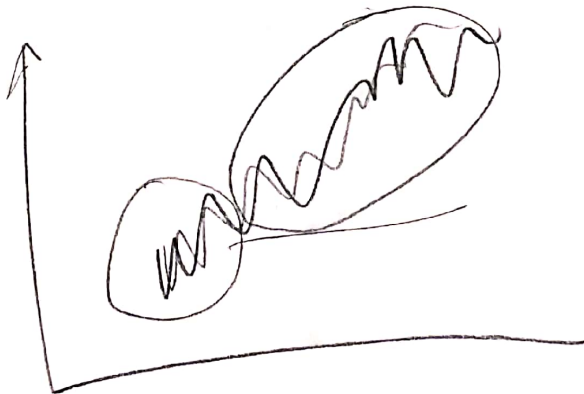
$$\begin{bmatrix} \vec{d}_0^T \\ \lambda \vec{d}_1^T \\ \lambda^2 \vec{d}_2^T \\ \vdots \\ \lambda^{n-1} \vec{d}_{n-1}^T \end{bmatrix} \quad \vec{x}[0] = \begin{bmatrix} y_0 \\ y_1 \\ y_2 \\ \vdots \\ y_{n-1} \end{bmatrix}$$

no wonder

$\vec{x}[0]$
should be mostly aligned
(the initial condition)

$$\begin{bmatrix} \vec{d}_0^T \\ \vec{d}_1^T \\ \vdots \\ \vec{d}_{n-1}^T \end{bmatrix} \quad \vec{x}[0] = \begin{bmatrix} \frac{y_0}{\lambda^0} \\ \frac{y_1}{\lambda^1} \\ \vdots \\ \frac{y_{n-1}}{\lambda^{n-1}} \end{bmatrix}$$

Try plotting
error



Try w/
all ϕ eigs
w/ non aligned
init-
(does)

$$P(|\lambda - \hat{\lambda}| > \epsilon)$$

$$E[\hat{\lambda}]$$