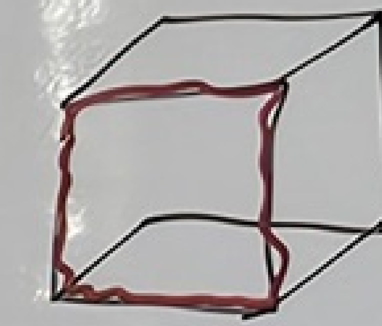
$$y = Ax$$

$$y = A^{-1}x$$



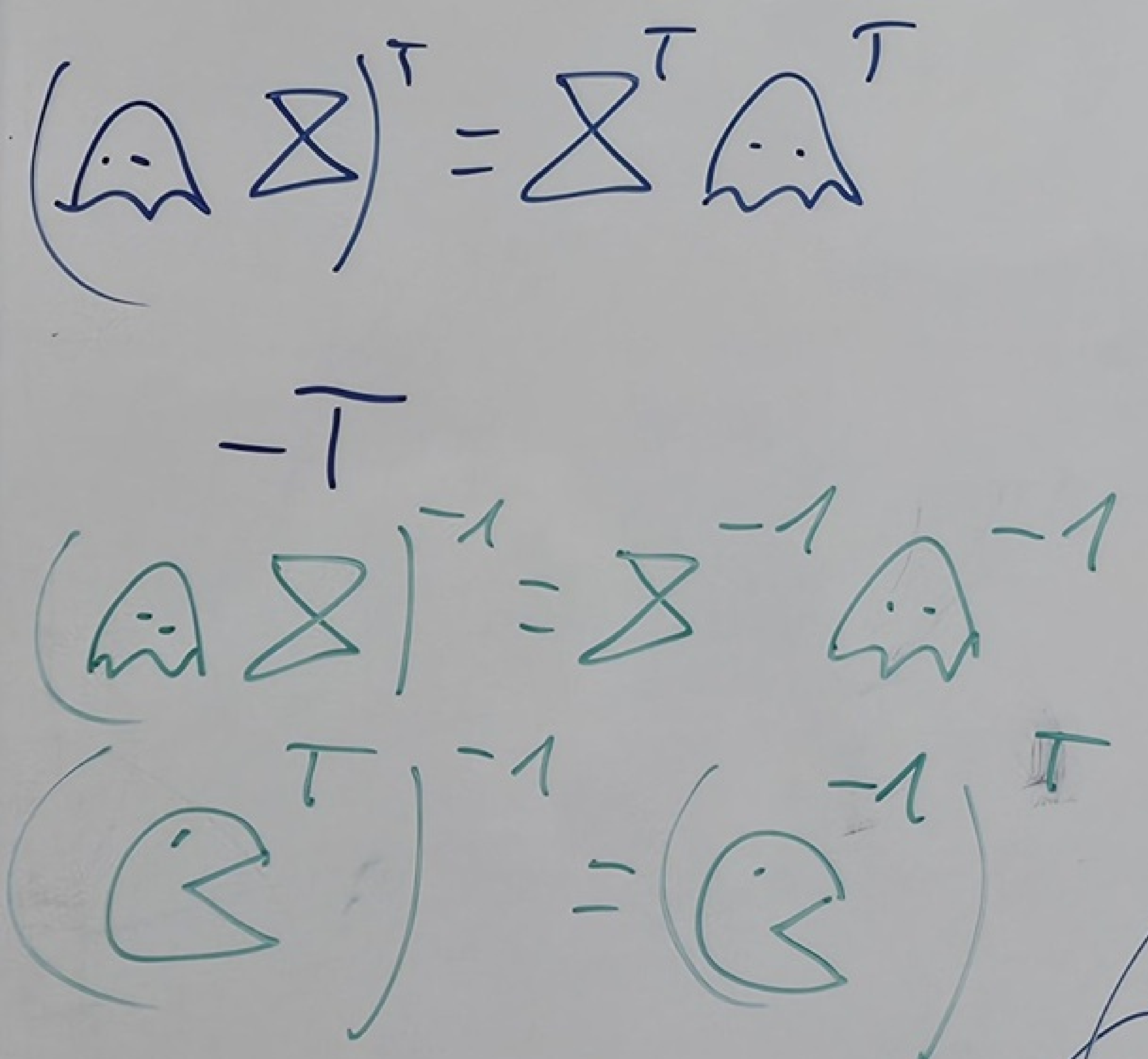
Inspiracja

$$\hat{y} = \tilde{\Theta}^T x$$

$$\hat{y} = \underline{\left[Y X^T (X X^T)^{-1} \right]} x$$

$$\boxed{\tilde{\Theta} = (X X^T)^{-1} X Y^T}$$

$$V^{-1} = V^T$$



zat.

$$X = V D V^{-1}$$

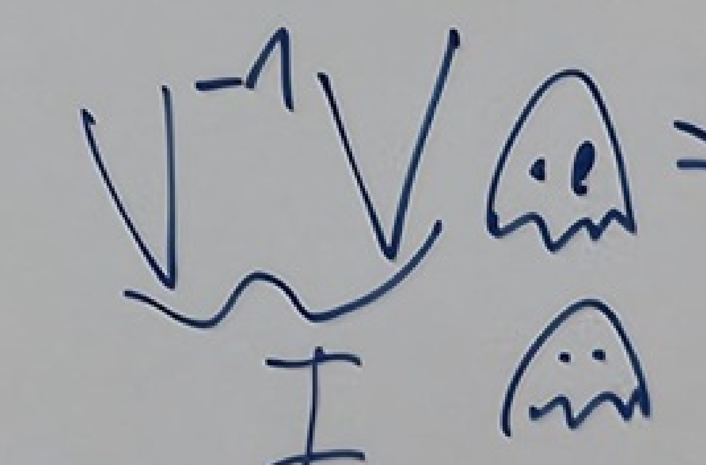
$$\tilde{\Theta} = \left[V D V^{-1} (V D V^{-1})^T \right]^{-1} V D V^{-1} Y^T$$

$$= \left[V D V^{-1} V^{-T} D^T V^T \right]^{-1} V D V^{-1} Y^T$$

$$= V D V^T V D^{-1} V^{-1} V D V^{-1} Y^T$$

$$= V D \underbrace{V^{-1} V}_{I} D^{-1} V^{-1} V D V^{-1} Y^T$$

$$= V D D^{-1} V^{-1} V D V^{-1} Y^T = V D V^T Y^T =$$



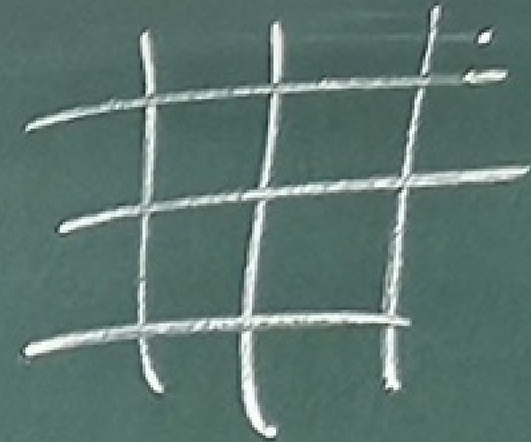
czy tu jest błąd oblicz.?

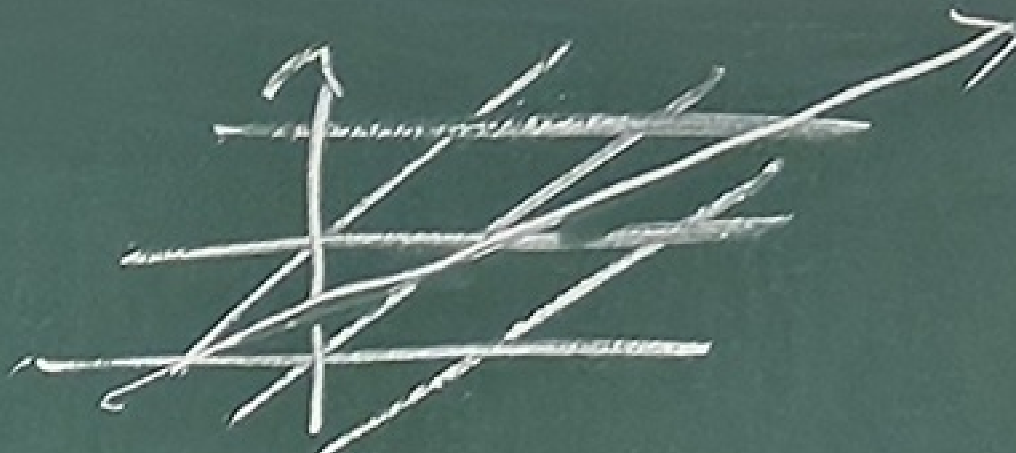
zaawans.

$$X = U D V^T$$

R-d SVD

$$A v_i = \lambda v_i$$





$$\lambda_i \sim v_i$$

$$A_{s \times s} \quad i = 1, \dots, s$$

$$\begin{bmatrix} Av_1 & Av_2 & \cdots & Av_s \end{bmatrix} = \begin{bmatrix} \lambda_1 v_1 & \lambda_2 v_2 & \cdots & \lambda_s v_s \end{bmatrix}$$

$$A \underbrace{\begin{bmatrix} v_1 & v_2 & \cdots & v_s \end{bmatrix}}_{V} = \underbrace{\begin{bmatrix} v_1 & v_2 & \cdots & v_s \end{bmatrix}}_{V} \underbrace{\begin{bmatrix} \lambda_1 & & 0 \\ & \lambda_2 & \\ 0 & & \ddots & \lambda_s \end{bmatrix}}_{D}$$

$$A \quad V = V \quad D$$

w domu

$$V = \begin{bmatrix} v^{(1)} \\ \vdots \\ v^{(s)} \end{bmatrix}$$

np.linalg.eig(A) $\quad A = VDV^{-1}$

$$A x$$

$$VDV^{-1} x$$

$$
\begin{tikzcd}
 & z \sim p_z(z) \arrow[d] & \\
\Theta \arrow[r] & \boxed{h(\Theta, z)} \arrow[r] & X
\end{tikzcd}
$$

Poz. tk tłusz

stęż. glukozy

np.

$h = \Theta + z$

$h = \Theta \cdot z$

$$\{x_i\}_{i=1}^{N} \xrightarrow{?} \Theta$$

Muszę znać

- r-d z
- wzór na h

aby „uruchomić" MMW

$x = \Theta + z \quad : h$

$z = x - \Theta \quad : h^{-1}$

$x = \Theta \cdot z \quad : h$

$z = \frac{x}{\Theta} \quad : h^{-1}$

$$
\begin{tikzcd}
\Theta \arrow[r] & \boxed{\mathcal{L}} \arrow[r] & \{x_i\}_{i=1}^{N}
\end{tikzcd}
$$

Model

Dane

$$p(\{x_i\} \mid \Theta) \equiv \mathcal{L}(\Theta) = \text{zbif. niezależ.}$$

$$= \prod_{i=1}^{N} p_x(x_i) = \prod_{i=1}^{N} p_z(z_i) \cdot \det\left|\frac{\partial h^{-1}}{\partial x}\right|$$