

$$X = \begin{pmatrix} \mathbf{x}_1^\top \\ \mathbf{x}_2^\top \\ \vdots \\ \mathbf{x}_i^\top \\ \vdots \\ \mathbf{x}_n^\top \end{pmatrix}_{n \times 2} \quad P = \begin{pmatrix} \mathbf{v}_1 & \mathbf{v}_2 \end{pmatrix}_{2 \times p} \quad XP$$