

$$\vec{z} = W^T \vec{x}$$

$$\vec{x}_2(s) = \begin{pmatrix} |h(s,1)| \\ |h(s,2)| \\ \vdots \\ |h(s, T/2 - 1)| \end{pmatrix}$$

$$\vec{v} = V_{PCA} \vec{z}$$

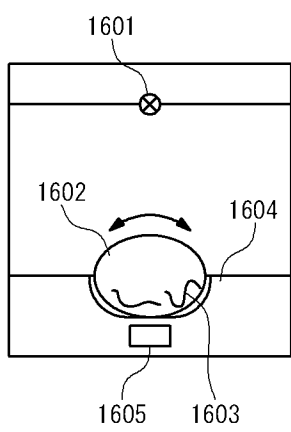
$$\vec{y} = W_{PCA}^T \vec{x}$$

$$\vec{z} = W_{LDA}^T \vec{y}$$

$$= W_{LDA}^T W_{PCA}^T \vec{x}$$

$$W^T = W_{LDA}^T W_{PCA}^T$$

$$W = W_{PCA} W_{LDA}$$



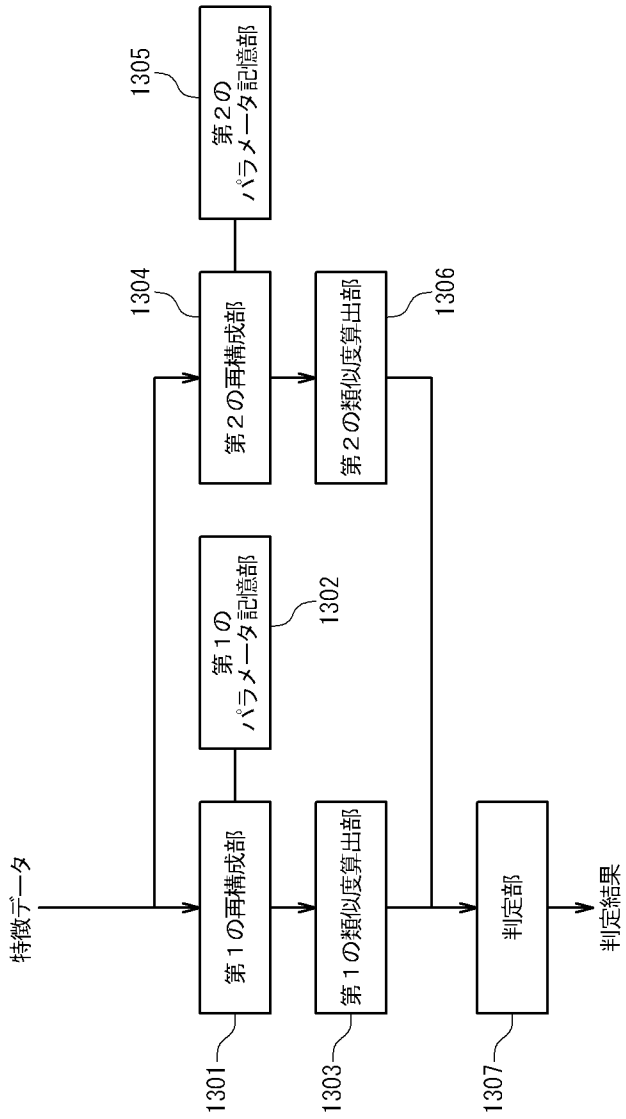
$$d_{DP} = \left| \vec{u}_{enroll}(t_1) - \vec{u}_{query}(t_2) \right|$$

$$R(k_{\text{enroll}}(\omega, t), k_{\text{query}}(\omega, t); q) = \frac{\sum_{(\omega, t)} k_{\text{enroll}}(\omega, t) k_{\text{query}}(\omega, t - q)}{\sqrt{\sum_{(\omega, t)} k_{\text{enroll}}(\omega, t)^2} \sqrt{\sum_{(\omega, t)} k_{\text{query}}(\omega, t - q)^2}}$$



$$\vec{y}_2(s) = V_{PCA3}^T \vec{x}_2(s)$$

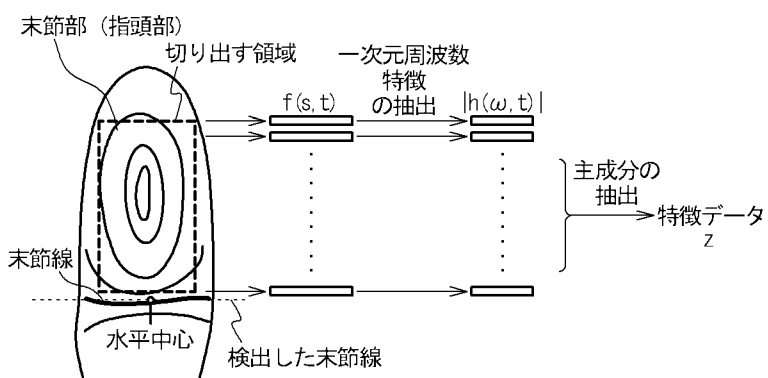
$$\begin{aligned} W &= \left( \vec{e}_1 \quad \vec{e}_2 \quad \cdots \quad \vec{e}_N \right) \\ \vec{u} &= z_1 \vec{e}_1 + z_2 \vec{e}_2 + \cdots + z_N \vec{e}_N \\ &= W \vec{z} \end{aligned}$$



$$\vec{y}_1(t) = V_{PCA1}^T \vec{x}(t)$$

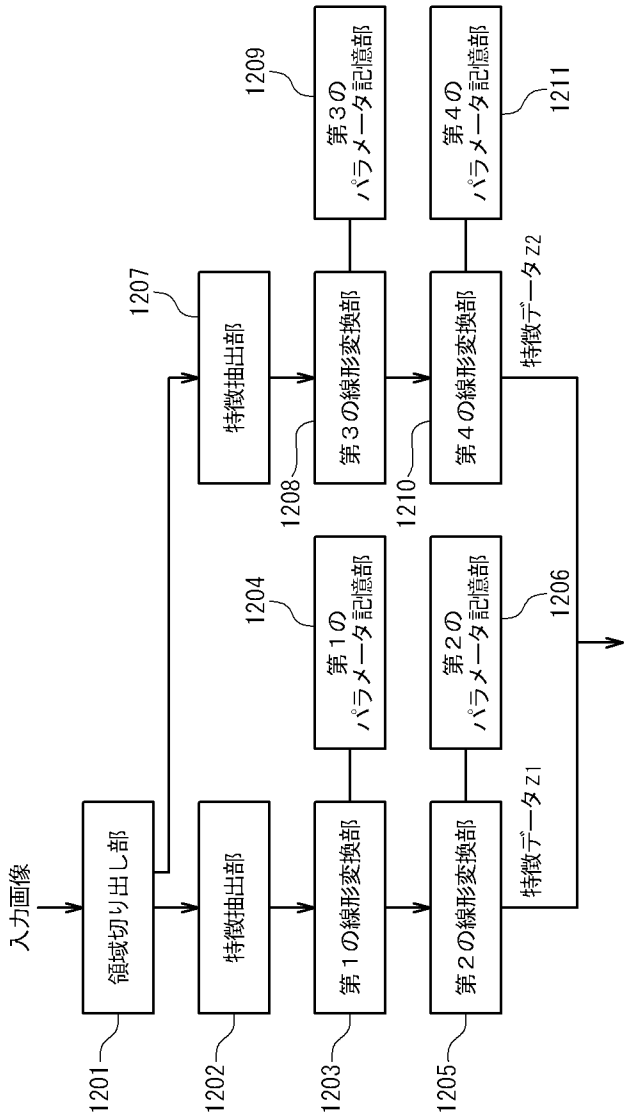
$$\vec{y}_2(t) = V_{PCA2}^T \vec{x}(t)$$

$$\vec{U} = V_{PCA2} \vec{Z}$$



$$\vec{Y}_1 = \begin{pmatrix} \vec{y}_1(0) \\ \vec{y}_1(1) \\ \vdots \\ \vec{y}_1(T-1) \end{pmatrix}$$

$$\vec{Y}_2 = \begin{pmatrix} \vec{y}_2(0) \\ \vec{y}_2(1) \\ \vdots \\ \vec{y}_2(T-1) \end{pmatrix}$$



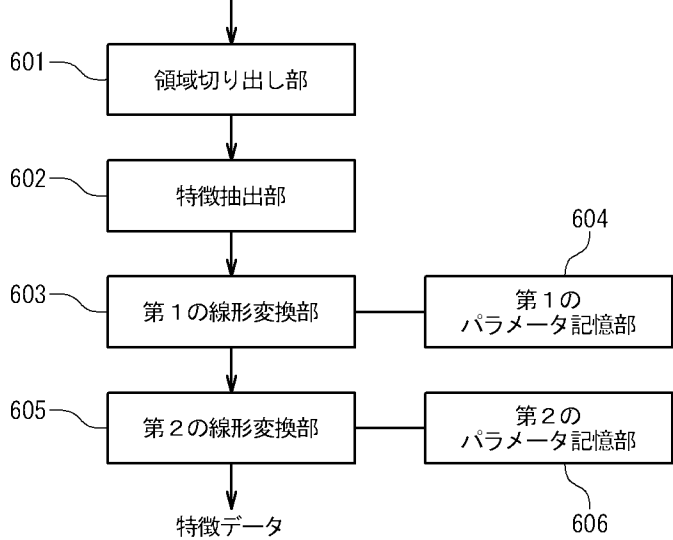


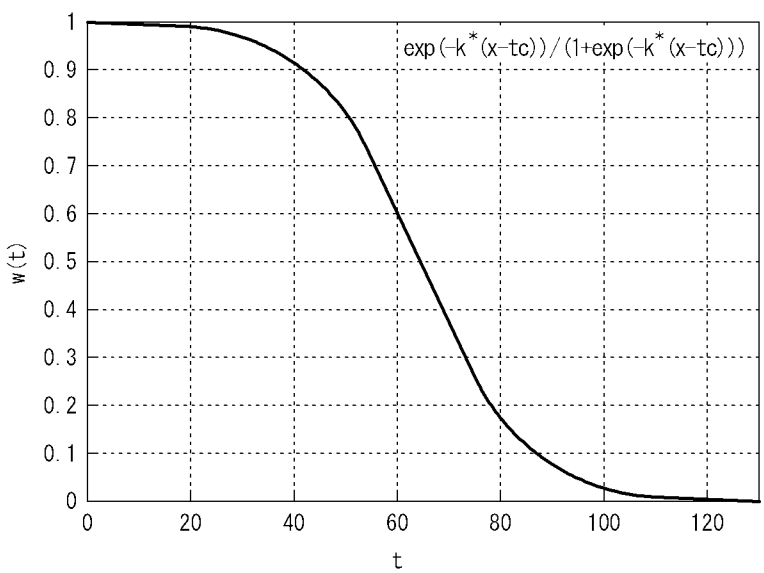
$$\vec{\mathbf{u}}_{enroll} = \mathbf{W} \vec{\mathbf{z}}_{enroll}$$

$$\vec{\mathbf{u}}_{query} = \mathbf{W} \vec{\mathbf{z}}_{query}$$

$$\vec{U} = \begin{pmatrix} \bar{u}(0) \\ \bar{u}(1) \\ \vdots \\ \bar{u}(T-1) \end{pmatrix}$$

入力画像





$$\vec{z}_1 = V_{LDA1}^T \vec{Y}_1$$

$$\vec{z}_2 = V_{LDA2}^T \vec{Y}_2$$

$$R(\mathbf{g}_{enroll}(s,t), \mathbf{g}_{query}(s,t); p, q) = \frac{\sum_{(s,t)} \mathbf{g}_{enroll}(s,t) \mathbf{g}_{query}(s-p, t-q)}{\sqrt{\sum_{(s,t)} \mathbf{g}_{enroll}(s,t)^2} \sqrt{\sum_{(s,t)} \mathbf{g}_{query}(s-p, t-q)^2}}$$

$$h(\omega, t) = \frac{1}{S} \sum_{s=0}^{S-1} f(s, t) e^{-2\pi i s \omega / S}$$

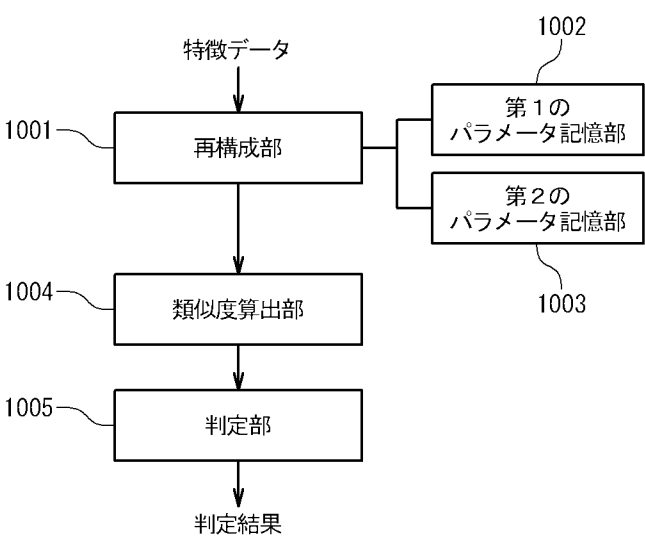
$$\vec{z}_2 = V_{PCA4}^T \vec{Y}_2$$



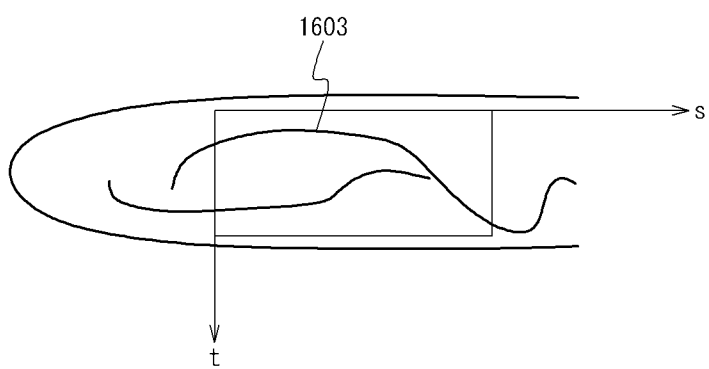
$$\vec{U}_1 = V_{LDA1} \vec{z}_1$$

$$\vec{U}_2 = V_{LDA2} \vec{z}_2$$

$$\vec{y}(t) = V_{PCA1}^T \vec{x}(t)$$

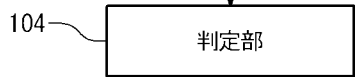
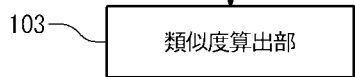
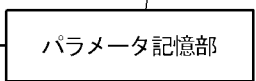
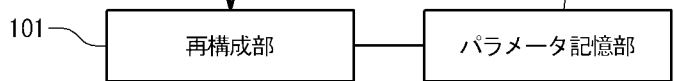


$$\vec{Y} = \begin{pmatrix} \vec{y}(0) \\ \vec{y}(1) \\ \vdots \\ \vec{y}(T-1) \end{pmatrix}$$



特徴データ

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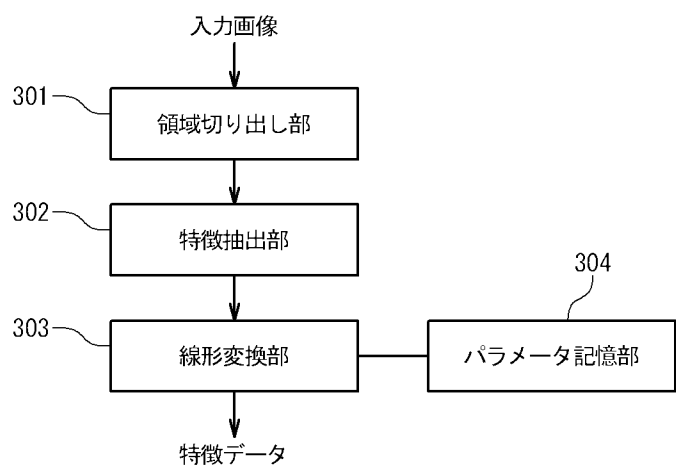
判定結果

$$\vec{Y}_2 = \begin{pmatrix} \vec{y}_2(0) \\ \vec{y}_2(1) \\ \vdots \\ \vec{y}_2(S-1) \end{pmatrix}$$

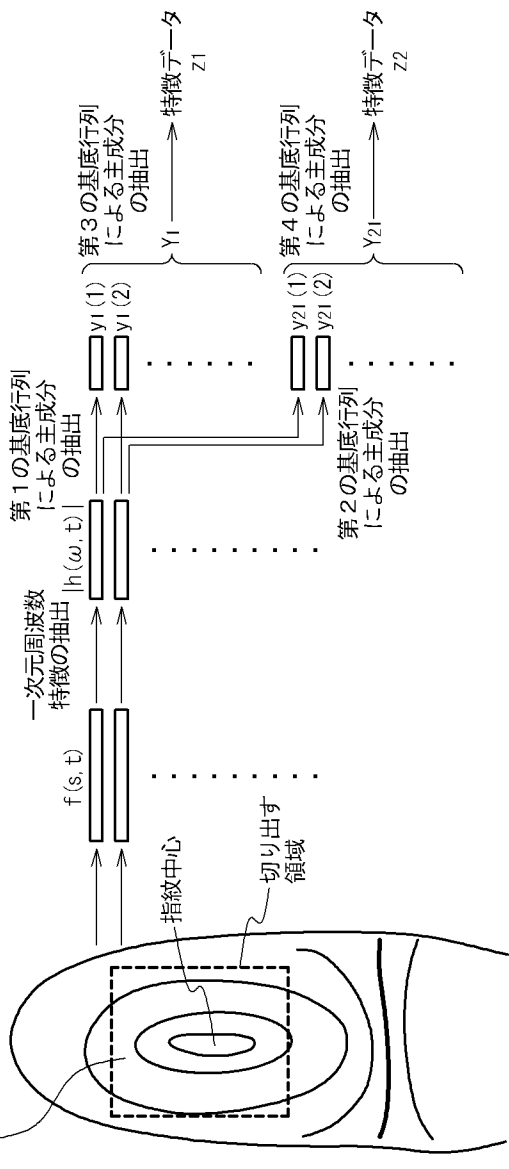
$$\begin{pmatrix} \vec{u}_1(0) \\ \vec{u}_1(1) \\ \vdots \\ \vec{u}_1(T-1) \end{pmatrix} = V_{PCA2} \vec{z}_1$$

$$\begin{pmatrix} \vec{u}_2(0) \\ \vec{u}_2(1) \\ \vdots \\ \vec{u}_2(S-1) \end{pmatrix} = V_{PCA4} \vec{z}_2$$





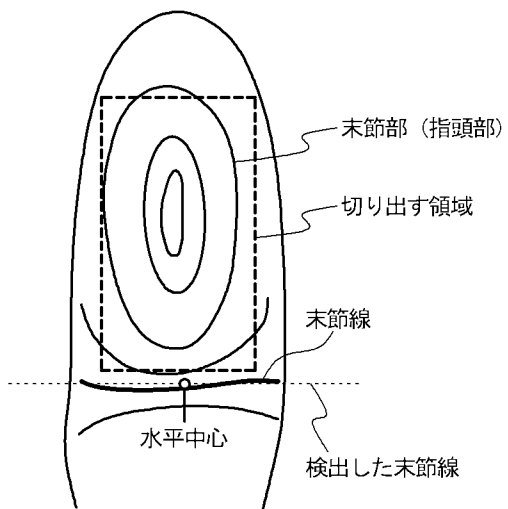
末節部 (指頭部)

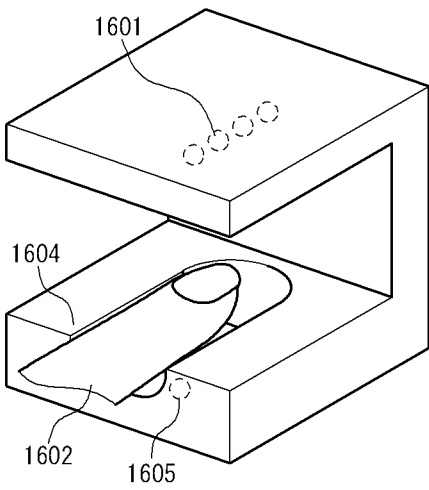


$$\vec{U}_1 = \begin{pmatrix} \vec{u}_1(0) \\ \vec{u}_1(1) \\ \vdots \\ \vec{u}_1(T-1) \end{pmatrix}$$

$$\vec{U}_2 = \begin{pmatrix} \vec{u}_2(0) \\ \vec{u}_2(1) \\ \vdots \\ \vec{u}_2(T-1) \end{pmatrix}$$

$$\vec{z} = V_{PCA2}^T \vec{Y}$$





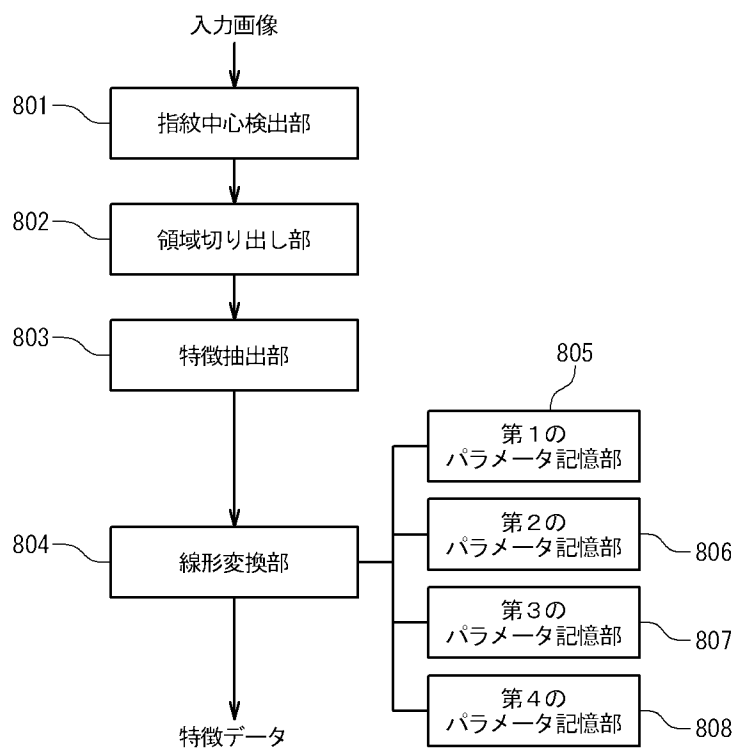
$$d = d_1 \cos \theta + d_2 \sin \theta$$

$$H(\phi) = \frac{1}{1 + \sum_{k=1}^{N_p} a_k \phi^{-k}}$$

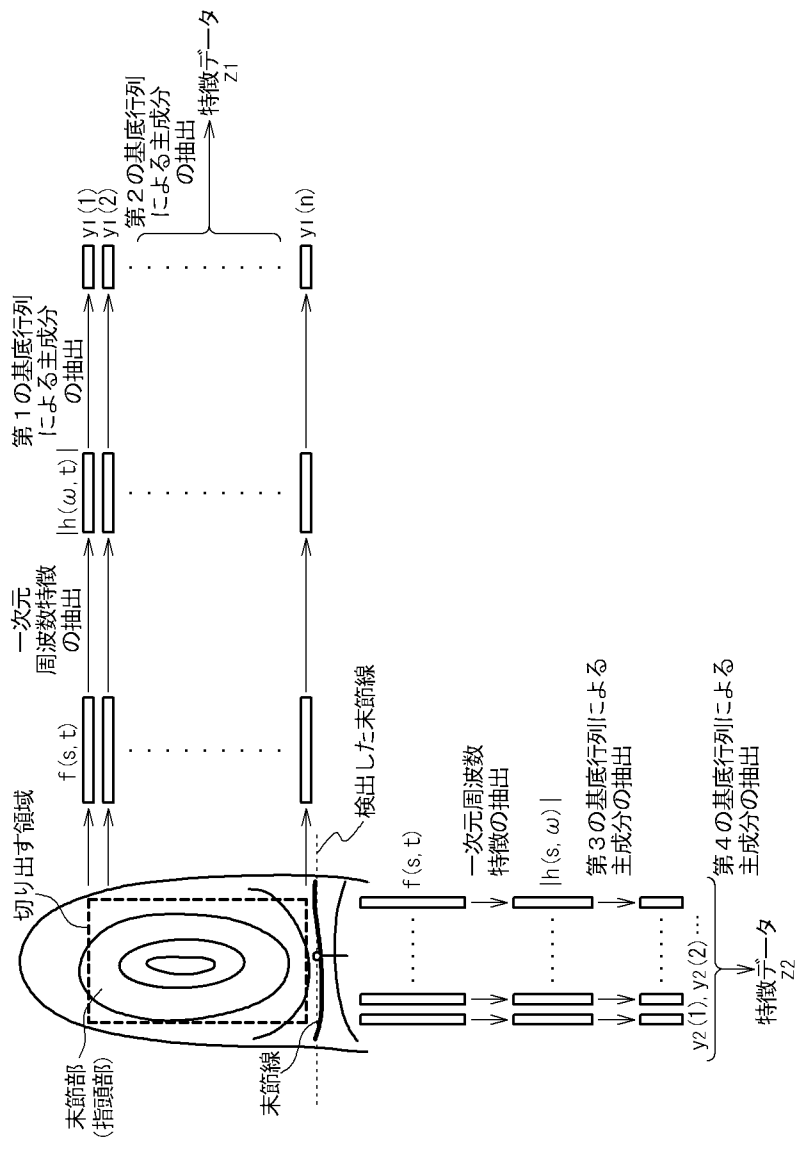


$$\vec{u}(t) = w(t)\vec{u}_1(t) + (1 - w(t))\vec{u}_2(t)$$

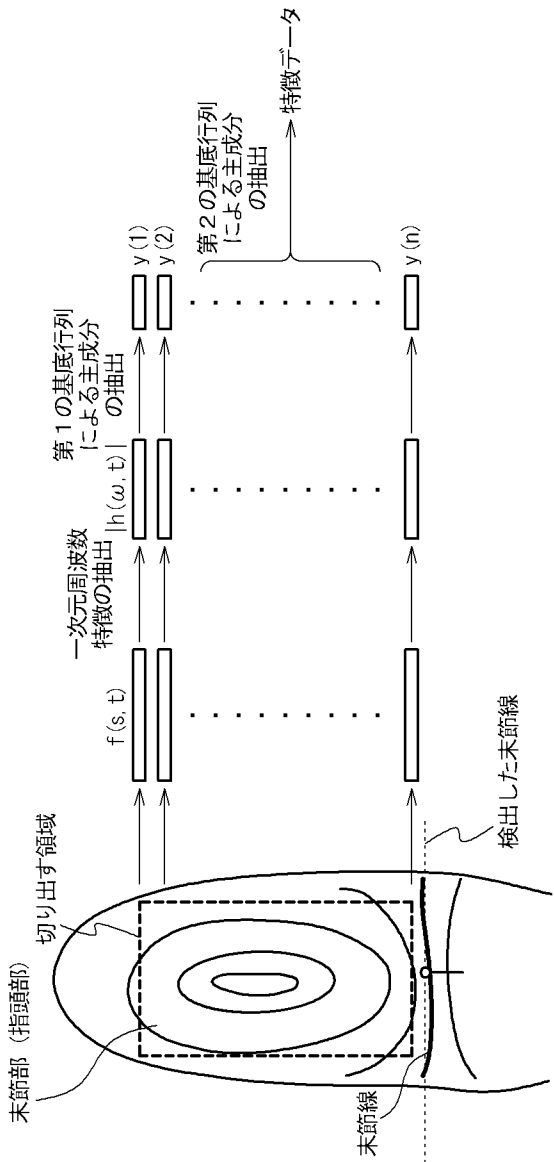
$$d_{DP} = \sum_{\omega=1}^{S/2-1} |k_{enroll}(\omega, t_1) - k_{query}(\omega, t_2)|$$



$$C_n = a_n - \sum_{m=1}^{n-1} \frac{m}{n} c_m a_{n-m}$$



$$\vec{x}(t) = \begin{pmatrix} |h(1,t)| \\ |h(2,t)| \\ \vdots \\ |h(S/2 - 1,t)| \end{pmatrix}$$

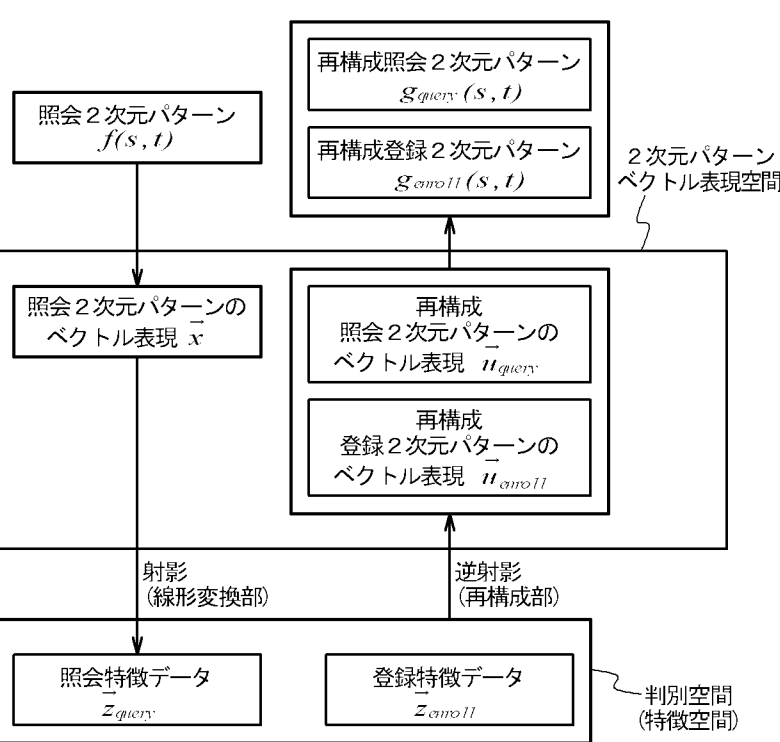


$$w(t) = \frac{e^{-k(t-t_c)}}{1 + e^{-k(t-t_c)}}$$



$$h(s, \omega) = \frac{1}{T} \sum_{t=0}^{T-1} f(s, t) e^{-2\pi i t \omega / T}$$

$$\vec{z} = V_{PCA}^T \vec{x}$$



2次元パターン

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線形変換部

特徴データ

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パラメータ記憶部

