A

0.0 0.0 1.0
0.447 0.894 0.0
0.0 0.707 0.707
1.0 0.0 0.0
1.0 0.0 0.0
0.0 1.0 0.0
0.0 0.447 0.894

U

-0.0005209078597325183 -0.0009591472708665827 -0.5000008638402036
-0.3156251254023 0.9488810354182603 0.0007457114886749919
-0.8020278685284269 -0.26677621455484446 -0.00016841550598830282
-0.00009259433922386847 0.0015409646174310918 -0.49999895737020417
-0.00009259433922386847 0.0015409646174310918 -0.49999895737020417
-0.0006135021381861991 0.0005818117481578561 0.5000006256285676
-0.5070812690695994 -0.16866897865065844 -0.00010648052502649373

V

-0.11429626772436824 0.8084581736970846 -0.5773488932756822
-0.7572925647870199 0.3052441685100805 0.577350819613939
-0.6429963720757507 -0.503211068015167 -0.5773510946767647

S

1234.3764066184553 0 0 0 0 0 0
0 524.6442160656792 0 0 0 0 0
0 0 1.154700194401022 0 0 0 0

A = USV

	Document 1	Document 2	Document 3
bank	0	0	1
bass	0.447	0.894	0
commercial	0	0.707	0.707
cream	1	0	0
guitar	1	0	0
fishermen	0	1	0
money	0	0.447	0.894

A

$$\begin{pmatrix} 0. & 0. & 1. \\ 0.447 & 0.894 & 0. \\ 0. & 0.707 & 0.707 \\ 1. & 0. & 0. \\ 1. & 0. & 0. \\ 0. & 1. & 0. \\ 0. & 0.447 & 0.894 \end{pmatrix}$$

U S V

$$\begin{pmatrix} -0.336368 & -0.279209 & 0.563595 \\ -0.423061 & 0.295725 & -0.37798 \\ -0.523991 & -0.179293 & 0.0000469602 \\ -0.136888 & 0.610354 & 0.281465 \\ -0.136888 & 0.610354 & 0.281465 \\ -0.404779 & 0.0256116 & -0.563529 \\ -0.481649 & -0.238164 & 0.251957 \end{pmatrix} \begin{pmatrix} 1.83888 & 0. & 0. \\ 0. & 1.48882 & 0. \\ 0. & 0. & 1.1831 \end{pmatrix} \begin{pmatrix} -0.25172 & 0.908706 & 0.333001 \\ -0.744341 & 0.038131 & -0.66671 \\ -0.618541 & -0.415691 & 0.666789 \end{pmatrix}$$

U S V^T =

$$\begin{pmatrix} -1.16565\times10^{-16} & -1.27963\times10^{-16} & 1. \\ 0.447 & 0.894 & 6.09051\times10^{-17} \\ -2.37702\times10^{-17} & 0.707 & 0.707 \\ 1. & 3.7161\times10^{-17} & -7.78593\times10^{-17} \\ 1. & 3.7161\times10^{-17} & -7.78593\times10^{-17} \\ -2.5533\times10^{-17} & 1. & -7.20994\times10^{-18} \\ -1.05459\times10^{-16} & 0.447 & 0.894 \end{pmatrix}$$

U S[2] V^T =

$$\begin{pmatrix} -0.222042 & 0.444555 & 0.555393 \\ 0.595914 & 0.595856 & 0.29818 \\ -0.0000185011 & 0.707037 & 0.706963 \\ 0.88911 & 0.222015 & -0.222042 \\ 0.88911 & 0.222015 & -0.222042 \\ 0.222015 & 0.555497 & 0.444555 \\ -0.0992643 & 0.64574 & 0.695237 \end{pmatrix}$$

a NOT $b = a - (a \cdot b) / |b|^2 \; b$ (in case b is not normalized)

1. bass NOT fisherman = (0.447, 0.894, 0.0) – 0.894 (0,1,0) = (0.447, 0, 0) → (1,0,0)
2. bass NOT fisherman = (0.59, 0.59, 0.3) – 1.2 (0.22, 0.55, 0.44) = (0.33, 0.0, -0.20) → (0.8, 0, 0.5)

Comment: the third document also contains some information about bass as a music instrument!