* In camera calibration

↳ rotation/translation vector ⇒ std::vector<cv::Mat> type.

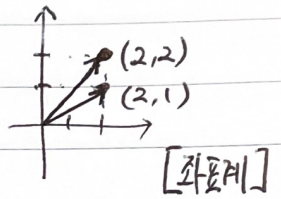
cf. 행렬 곱: $\vec{a}\begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix} \times \begin{bmatrix} b_{11} & b_{12} \\ b_{21} & b_{22} \end{bmatrix}$ ($\vec{c}$, $\vec{d}$) (벡터 $\vec{a}, \vec{b}, \vec{c}, \vec{d}$)

$$= \begin{bmatrix} a_{11}b_{11}+a_{12}b_{21} & a_{11}b_{12}+a_{12}b_{22} \\ a_{21}b_{11}+a_{22}b_{21} & a_{21}b_{12}+a_{22}b_{22} \end{bmatrix}$$

($\vec{a}\cdot\vec{c}$, $\vec{a}\cdot\vec{d}$, $\vec{b}\cdot\vec{c}$, $\vec{b}\cdot\vec{d}$)

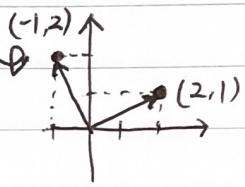
cf. 행렬은 벡터의 조합

cf. 스케일 $[2 \quad 1] \times \begin{bmatrix} 1 & 0 \\ 0 & 2 \end{bmatrix} = [2 \quad 2]$ (1행, 2열)



cf. 회전 $[2 \quad 1] \times \begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix} = [-1 \quad 2]$

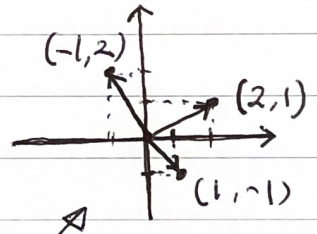
하나의 행벡터로 생각 ↑



cf. 회전&이동. $[2 \quad 1] \times \begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix} + [2 \quad -3]$

$= [-1 \quad 2] + [2 \quad -3]$

$= [1 \quad -1]$



cf. 회전과 이동을 한번에 처리하기

x y 조

$[2 \quad 1 \quad 1] \times \begin{bmatrix} 0 & 1 & 0 \\ -1 & 0 & 0 \\ 2 & -3 & 1 \end{bmatrix}$ ← rotation & scaling / ← translation

$= [2\times0+1\times(-1)+1\times2 \quad \cdots \quad 1]$

$2\times1+1\times0+1\times(-3)$

$= [1 \quad -1 \quad 1]$