Force Vectors

Vectors directions as a function of α, for the 2D case.
Where unit vectors are defined as:

$$\hat{t_1} = \begin{bmatrix} \cos\alpha \\ \sin\alpha \\ -r \end{bmatrix} = \frac{1}{||T_1||} \begin{bmatrix} \vec{T_1} \cdot \hat{n_x} \\ \vec{T_1} \cdot \hat{n_y} \\ -\vec{r} \, x \, \vec{T_1} \cdot \hat{n_z} \end{bmatrix} \tag{1}$$

Where compressive forces are denoted c_1, c_2, and tension in adhesive is denoted t_1, t_2.
Putting this in a matrix format yields:

$$A = [\hat{t_1} \ \hat{t_2} \ \hat{c_1} \ \hat{c_2}] \tag{2}$$

Where A is $\mathbb{R}^{mxn}$ in this 2D case. We have $m = 3$ DOF and $n = 4$ force vectors.