Consider again:

$$P = RQ + t$$

It can be rewritten in the form

$$A_{3\times 12}\begin{bmatrix} R_{9\times 1} \\ t_{3\times 1} \end{bmatrix} = b_{12\times 1}. \longrightarrow (1)$$

Why cannot we solve it as a least squares solution in terms of $[r_{11}, \cdots, r_{33}]$ and $[t_x\ t_y\ t_z]^T$.

The above formulation is non-convex because it is subject to the non-convex constraint:

$$RR^T = R^T R = I_{3\times 3} \longrightarrow (2).$$

$$\|R_1\| = \|R_2\| = \|R_3\| = 1 \longrightarrow (3)$$

$$R_i . R_j = 0 \longrightarrow (4).$$