$\Sigma^n :=$ the set of symmetric, $(n \times n)$ matrices with entries from $\mathbb{R}$.

$$\Sigma_+^n := \left\{ Y \in \Sigma^n : h^T Y h \geq 0, \ \forall h \in \mathbb{R}^n \right\}$$

the closed convex cone of $(n \times n)$ symmetric positive semidefinite matrices

If we can compute a linear transformation $\bar{\mathcal{A}}$ and a vector $\bar{b}$ such that

$$P_I = \left\{ x \in \mathbb{R}^n : \exists\, X \in \Sigma^n \text{ such that } \begin{pmatrix} 1 & x^T \\ x & X \end{pmatrix} \in \Sigma_+^{n+1} \text{ and } \bar{\mathcal{A}} \begin{pmatrix} 1 & x^T \\ x & X \end{pmatrix} \leq \bar{b}, \ 0 \leq x \leq e \right\}$$

then we can use Semidefinite Optimization techniques to solve the (COP)