Short report on how MVSK relates to POP

In response to the tow following statements

"probably better if I don't talk too much on how we are approaching it, rather focus on the problem itself"

I don't know what would be revealing too much but essentially I would state the multi objective problem:
""""

$$\begin{aligned} \max \;\; & f_1(w) := w^T \mu \\ \min \;\; & f_2(w) := w^T \Phi^{(2)} w \\ \max \;\; & f_3(w) := w^T \Phi^{(3)} (w \otimes w) \\ \min \;\; & f_4(w) := w^T \Phi^{(4)} (w \otimes w \otimes w) \\ s.t. \;\; & w \in \Delta^N \end{aligned} \tag{0}$$

where $\mu, \Phi^{(2)}, \Phi^{(3)}$, and $\Phi^{(4)}$ are appropriate data matrices.
""""
And then observe that all the constraints and objectives can be expressed as polynomials. Hence, the problem can be attacked using polynomial optimization (POP) with the added benefit the POP give bounds on global optimality in contradistinction to many of the techniques currently in use.

If you wish to reveal more you can say:

""""
... the problem can be phrased as:

$$\begin{aligned} \not{f}_{\min} := \min \;\; \not{f}(w) := & \left(1 - \frac{f_1(w)}{f_{1,\max}}\right)^{\lambda_1} + \left(\frac{f_2(w)}{f_{2,\min}} - 1\right)^{\lambda_2} \\ & + \left(1 - \frac{f_3(w)}{f_{3,\max}}\right)^{\lambda_3} + \left(\frac{f_4(w)}{f_{4,\min}} - 1\right)^{\lambda_4} \\ s.t. \;\; w \in \Delta^N & \end{aligned} \tag{5}$$

This in turn can be expressed as a signomial optimisation problem. Noting that signomial optimization is a special case of polynomial optimization.
""""

"have you gathered or written more materials on what is MVSK portfolio construction and how it's related to polynomial optimization?"

I have not written more than there is on the git currently. As for sources, the only new source I have gotten is :

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but I have not parsed this document yet.