$$
\begin{aligned}
\min_{x(\cdot),\, u(\cdot),\, z(\cdot)} \quad & \int_0^T l(x(\tau), u(\tau), z(\tau), p)\mathrm{d}\tau + m(x(T), z(T), p) \\
\text{s.t.} \quad & x(0) - \bar{x}_0 = 0, \\
& \underline{x}_0 \leq \Pi_{x_0} x(0) \leq \bar{x}_0, \\
& \underline{u}_0 \leq \Pi_{u_0} u(0) \leq \bar{u}_0, \\
& \underline{z}_0 \leq \Pi_{z_0} z(0) \leq \bar{z}_0, \\
& \underline{c}_0 \leq C_0 x(0) + D_0 u(0) + E_0 z(0) \leq \bar{c}_0, \\
& F(x(t), \dot{x}(t), u(t), z(t), p) = 0, && t \in [0,\, T), \\
& \underline{h} \leq g(h(x(t), u(t), z(t), p)) \leq \bar{h}, && t \in [0,\, T), \\
& \underline{x} \leq \Pi_x x(t) \leq \bar{x}, && t \in (0,\, T), \\
& \underline{u} \leq \Pi_u u(t) \leq \bar{u}, && t \in (0,\, T), \\
& \underline{z} \leq \Pi_z z(t) \leq \bar{z}, && t \in (0,\, T), \\
& \underline{c} \leq C x(t) + D u(t) + E z(t) \leq \bar{c}, && t \in (0,\, T), \\
& F_T(x(T), z(T), p) = 0, \\
& \underline{h}_T \leq g_T(h_T(x(T), z(T), p)) \leq \bar{h}_T, \\
& \underline{x}_T \leq \Pi_{x_T} x(T) \leq \bar{u}_T, \\
& \underline{z}_T \leq \Pi_{z_T} z(T) \leq \bar{z}_T, \\
& \underline{c}_T \leq C_T x(T) + E_T z(T) \leq \bar{c}_T,
\end{aligned}
\tag{1}
$$

where $l : \mathbb{R}^{n_x} \times \mathbb{R}^{n_u} \times \mathbb{R}^{n_z} \to \mathbb{R}$, $m : \mathbb{R}^{n_x} \times \mathbb{R}^{n_z} \to \mathbb{R}$ are the Lagrange and Mayer objective terms, respectively. The function $F : \mathbb{R}^{n_x} \times \mathbb{R}^{n_x} \times \mathbb{R}^{n_u} \times \mathbb{R}^{n_z} \times \mathbb{R}^{n_p} \to \mathbb{R}^{n_x+n_z}$, represents the (potentially) fully implicit dynamics of the system, while $F_T : \mathbb{R}^{n_x} \times \mathbb{R}^{n_z} \times \mathbb{R}^{n_p} \to \mathbb{R}^{n_x+n_z}$ describes the terminal algebraic constraint. The constraints are described by the general nonlinear functions, $h : \mathbb{R}^{n_x} \times \mathbb{R}^{n_u} \times \mathbb{R}^{n_z} \times \mathbb{R}^{n_p} \to \mathbb{R}^{n_h}$ and $h_T : \mathbb{R}^{n_x} \times \mathbb{R}^{n_z} \times \mathbb{R}^{n_p} \to \mathbb{R}^{n_{h_T}}$ and the nonlinear convex functions $g : \mathbb{R}^{n_h} \to \mathbb{R}^{n_g}$ and $g_T : \mathbb{R}^{n_{h_T}} \to \mathbb{R}^{n_{g_T}}$.

Currently not yet implemented features:

- l must be in linear least-squares form $l = \frac{1}{2}\|V_x x(t) + V_u u(t) + V_z z(t)\|_W^2$
- support for soft constraints missing
- constraints cannot depend on algebraic variables (yet)