Tue Jan 25

Prof Burden TODO: ☐ announce in-person class

☐ instructions for self-assess

↳ clarify for contingent problems

consider NLP with constraints: $\min_{w \in \mathbb{R}^l} c(w)$ $\quad c: \mathbb{R}^l \to \mathbb{R}$

s.t. $f(w) = 0$ $\quad f: \mathbb{R}^l \to \mathbb{R}^n$

→ why is it reasonable to assume $D_x f(x_0, u_0)$ invertible?

- otherwise constraints are redundant!

consider the linear case: $f(x,u) = L \cdot \begin{bmatrix} x \\ u \end{bmatrix}$

→ what if constraints are inconsistent?

* this could happen very easily — many algorithms will start by considering only the feasibility problem:

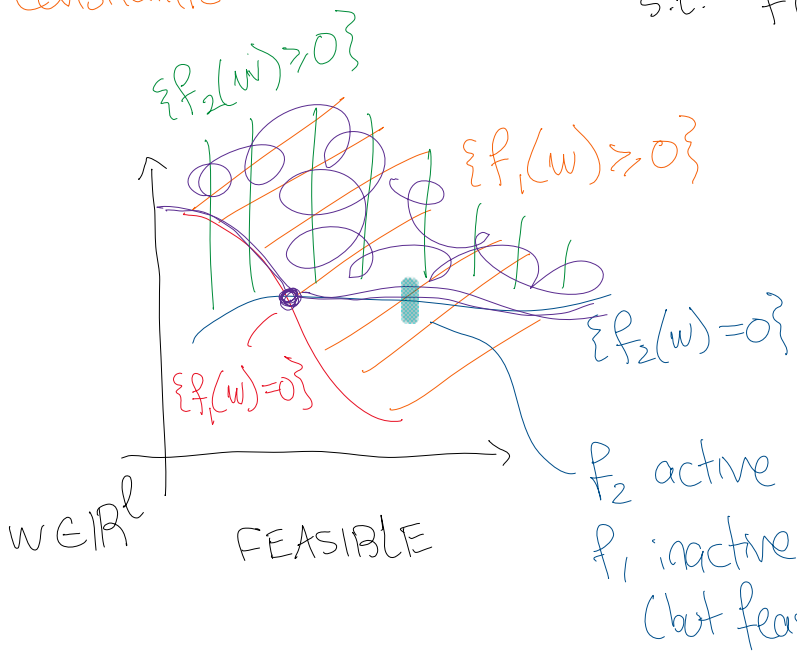
find w s.t. $f(w) = 0$

→ what about inequalities $\min_w c(w)$ $\quad c: \mathbb{R}^l \to \mathbb{R}$

→ what about inequality constraints?

$$\min_{w \in \mathbb{R}^l} c(w) \qquad c : \mathbb{R}^l \to \mathbb{R}$$

$$\text{s.t.} \quad f(w) \geq 0 \qquad f : \mathbb{R}^l \to \mathbb{R}^n$$



f_2 active
f_1 inactive (but feasible)