Last Time: - Robert Control Today: - Tips + trichs - Historical Overview * Problem Scaling! · Units moster! - For "truman-scale" things, meters, kg,, ccc. are often appropriate. - For very large or small systems, you may - Generally choose units so that things in your problem are OCI) - For micro robots (insect scale) this night be mm, ms, mg. - For gpacecraff this might be 1000 km hours. - Poorly scaled units lead to fil-conditioning of Tacobian matrices. MKS for a LEO satellite! r ≈ 7 × 106 moters, V ≈ 7 × 103 m/sec. V= 8 m/s2 =7 cond(A) ~ 9 × 10°

	=> losing 6-7 digits of accracy
	=> losing b-7 digits of accracy when solving Ax=6
*	Furthal Guesses!
	- Since Newton's method only converges to nearest local fixed point, with guess can matter a lot.
	nearest local fixed point, shittel guess can
	matter a lot.
	- It you can gamente a teasible quess u.v.t.
	- If you can gamente a feasible quess u.v.t.
	- Its after a good idea to sive (nearly)
	dynamically teasible gresses to NIRCOL
	- Its after a good iden to gre (nearly) dynamically feasible gresses to DIRCOL (e.g. do a vollout)
	- For DNP its a good idea to start with
	stable "trim conditions" that won't blow up
	- For DDP its a good idea to start with stable "trim conditions" that won't blow up le.g. hover or gravity compensation torques).
	- tor open-loop unstable systems de The
	bachrayd pass of WDP 195 to That The
	large sollow was soabiliting tech buch and
	- For open-loop unstable systems do the backward pass of DDP Blast so that the forward rollort has stabilizing feed back and doesn't blow UP.
7	Cost Shaping
	- cost and constraint functions are how we
	and constraint whethers are con we
	encole behaviors,
	- Think carefully about what should be a cost
	Us. constaints,

•	Non-quadratic costs are OK, Try to come up nish smooth, non-negative, fructions
	come of with smooth, non-negative, institutes
	that go to zero when what you want is
	ach'r ved.
	TE you have a graft mand solo of
	If you have a pretty good idea of what
	the trajectory of part of the system should look like veg, time leg. Com, or a foot) you can pot a quadratic tracking cost on it:
	1001 like ve rime leg. (on, or a toot)
	you can pot a graduatic tracking cost on it;
	$\frac{N_1}{S}$
	2 (xn-9(xn)) + Q(xn-9(xn)) + (4n-4rex) TR[4n-4ne
	reference quarity trajetory compensation
	trajetony compensation
~	You are and Tai Coat with some 14 6
	You can seed Traj Op+ with vesults from sample-based or other planners this way.
	sample-based or ofter planners inis cons.