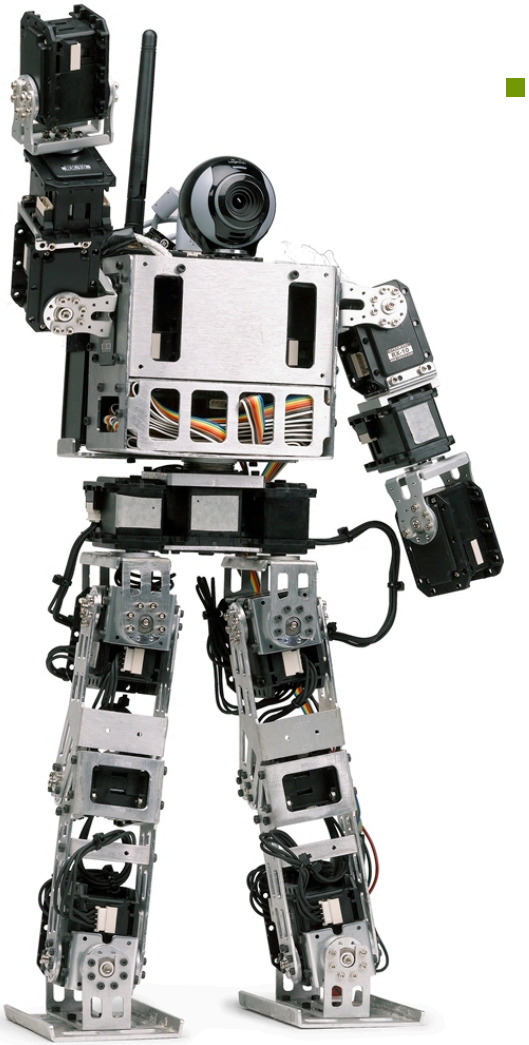
Step SISTR

some ideas

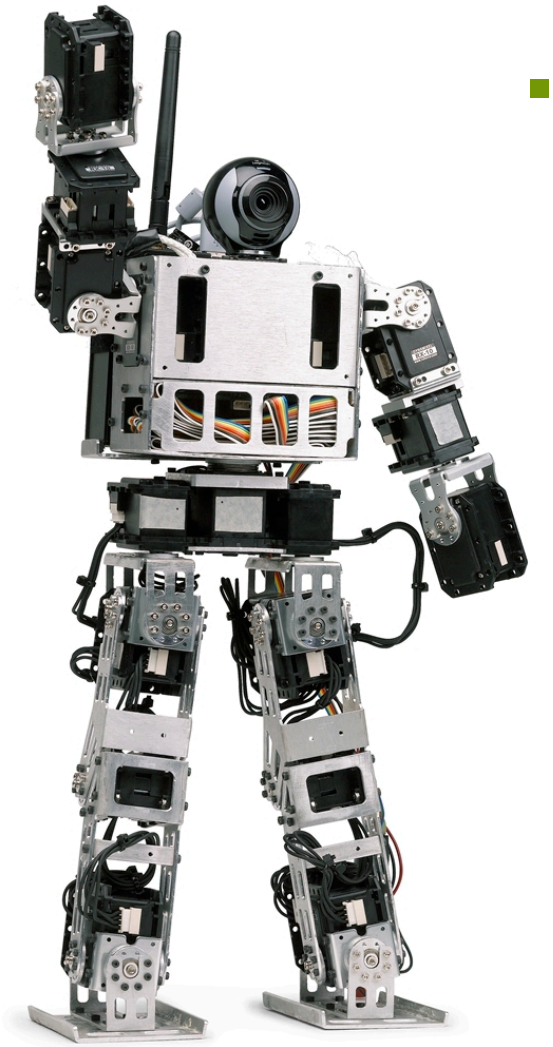
Alex and **Sean**

Goal



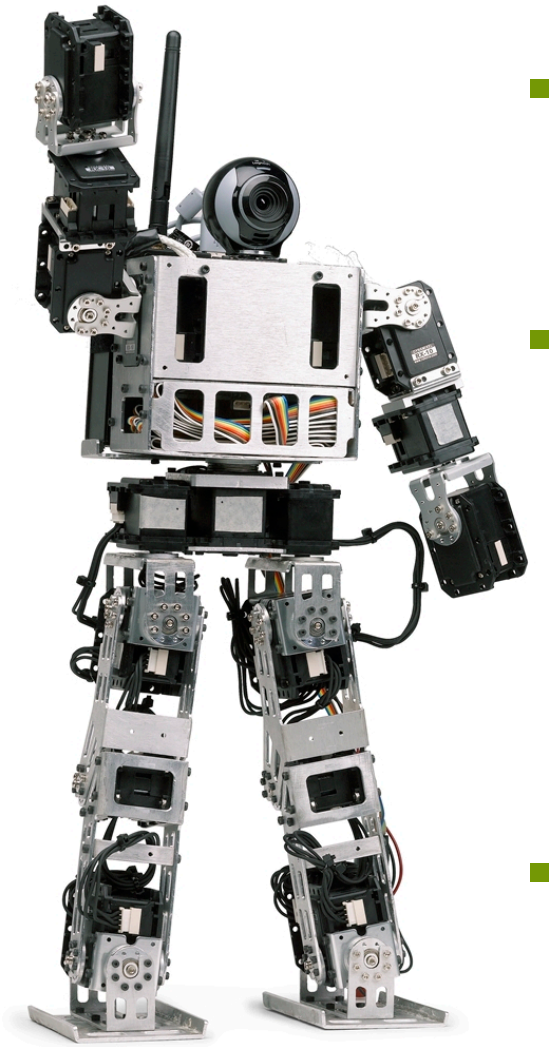
- A system that can follow MiniHUBO around the 279 workspace (5’x10’) to
  - protect from falls
  - reset position after falls
  - provide position data

Some **ideas**



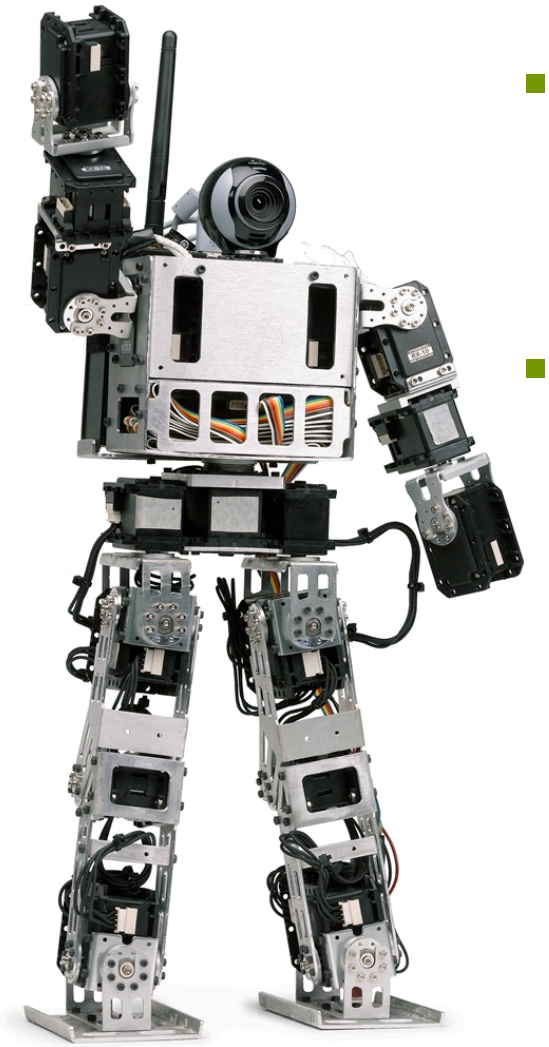
- Passive, active, or both?

An idea: **Passive**



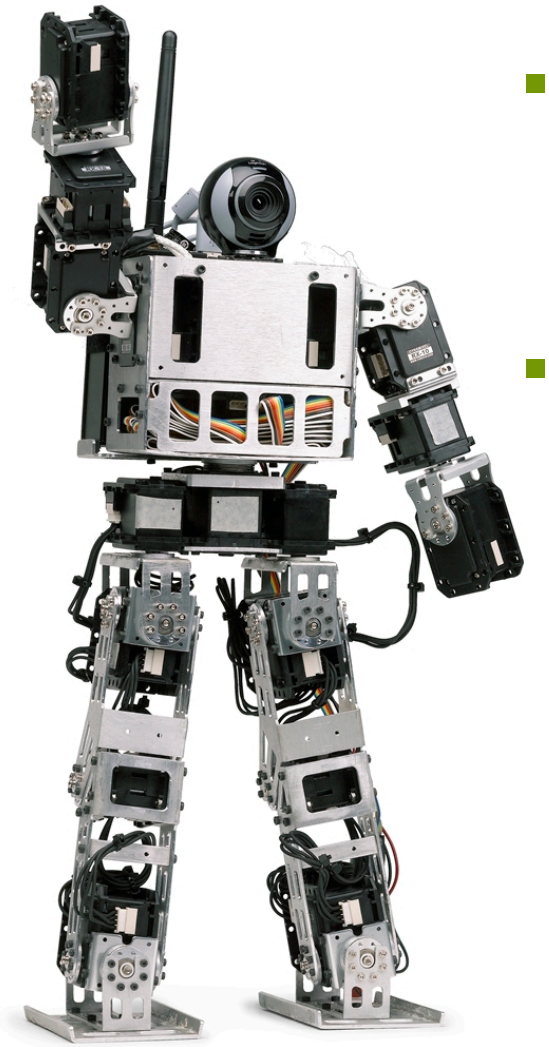
- MiniHUBO will pull the end effector around
  - This provides protection from fall impact only
  - Position resetting would be manual
- Proposals
  - String and bushings
    - Foresee binding and friction problems
  - String from ceiling
    - Only a portion of the table would be useable based on string length
- MiniHUBO should not endure external forces!

Another idea: **Passive+Active**



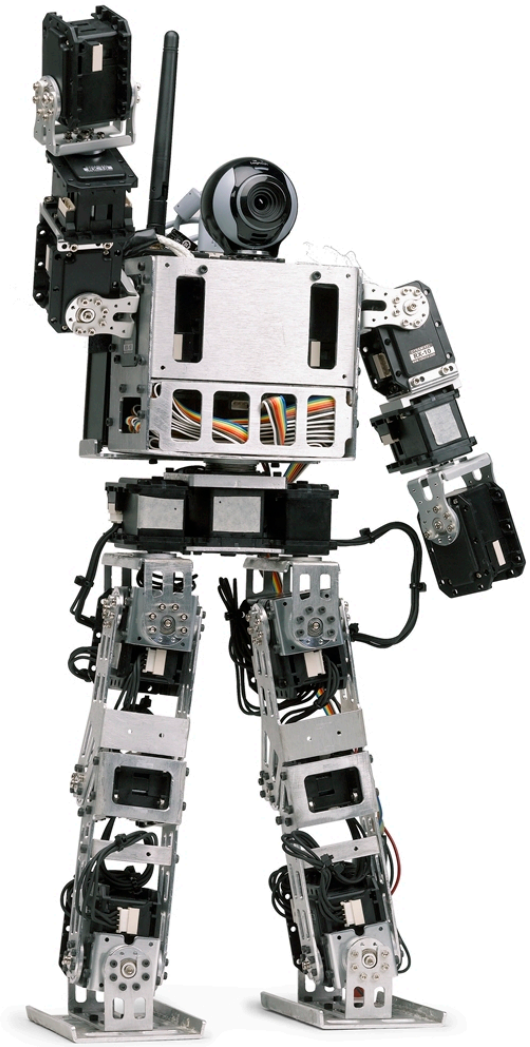
- MiniHUBO will pull the end effector around and system would activate axes for position resetting
  - This provides resetting and protection from falls
  - Complex, heavy and expensive
- Proposal
  - Passive gantry with bearings on X and Y axes. Active gantry on tracks above it. When resetting is necessary, electromagnets or hooks would lock the pairs of axis together while moving.
    - Pro: resetting is automatic with set home positions
    - Con: an even heavier system for MiniHUBO to pull around

Last idea: **Active**



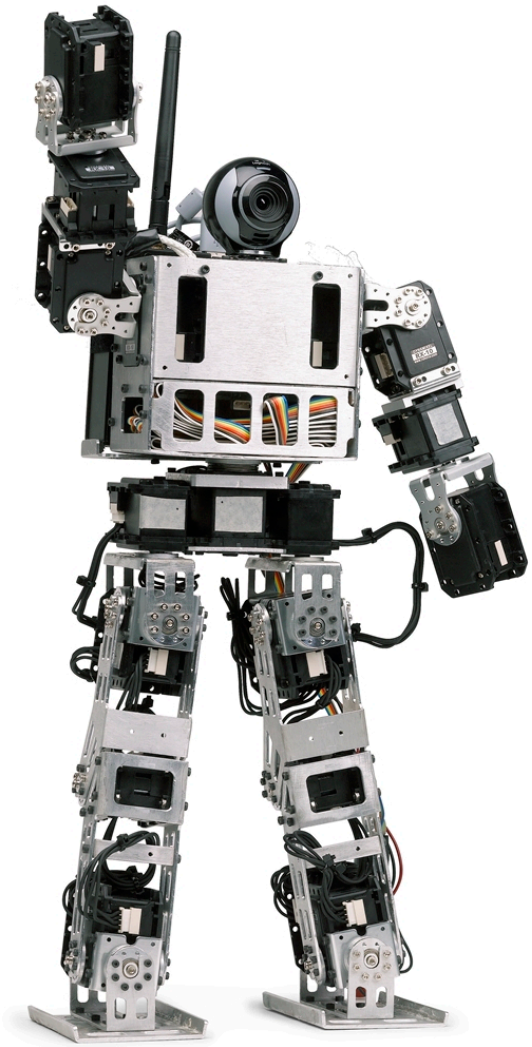
- Gantry will follow MiniHUBO around the workspace and reset when necessary
  - This provides resetting and protection from falls
  - Complex **but** we have most of it done
- Proposals
  - **Scaled version on Little SISTR with MiniHUBO auto tracking and following system** (inverted joystick, camera system, Dave)
    - Tracking/resetting is automatic with set home positions
    - With little SISTR designs, we only need to design the end effector and program the following system

Summary



- External forces on MiniHUBO are no good
- Why have passive if we need active for resetting?
- Let's build a larger version of Little SISTR...

- **Step SISTR**
  - If we use the **same motors and motor controllers**, Chris can provide a lot of help getting it up and running with a game controller
  - We can build or buy a **low-springiness gimbal** and write a controller to follow MiniHUBO or
  - Use **vision** (again with Chris' system, this shouldn't take long)



Questions?
Ideas?