Robotics 311 : How to build robots and make them move

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Photo credit: Brenda Ahearn / U-M CoE

Lab 13

- Today and tomorrow: free time to develop your ball-bot controllers
- Practice competition events
- You can add the LED strip or smart LED IC to your ball-bots if you'd like
  - We can show you how to do this if you are ready
- Ball-bot disturbance rejection test – Neurobionics hexapod floor
  - We will do the disturbance rejection test in my laboratory
  - FRB 1140 – lab looks out to east of the elevator / stairs

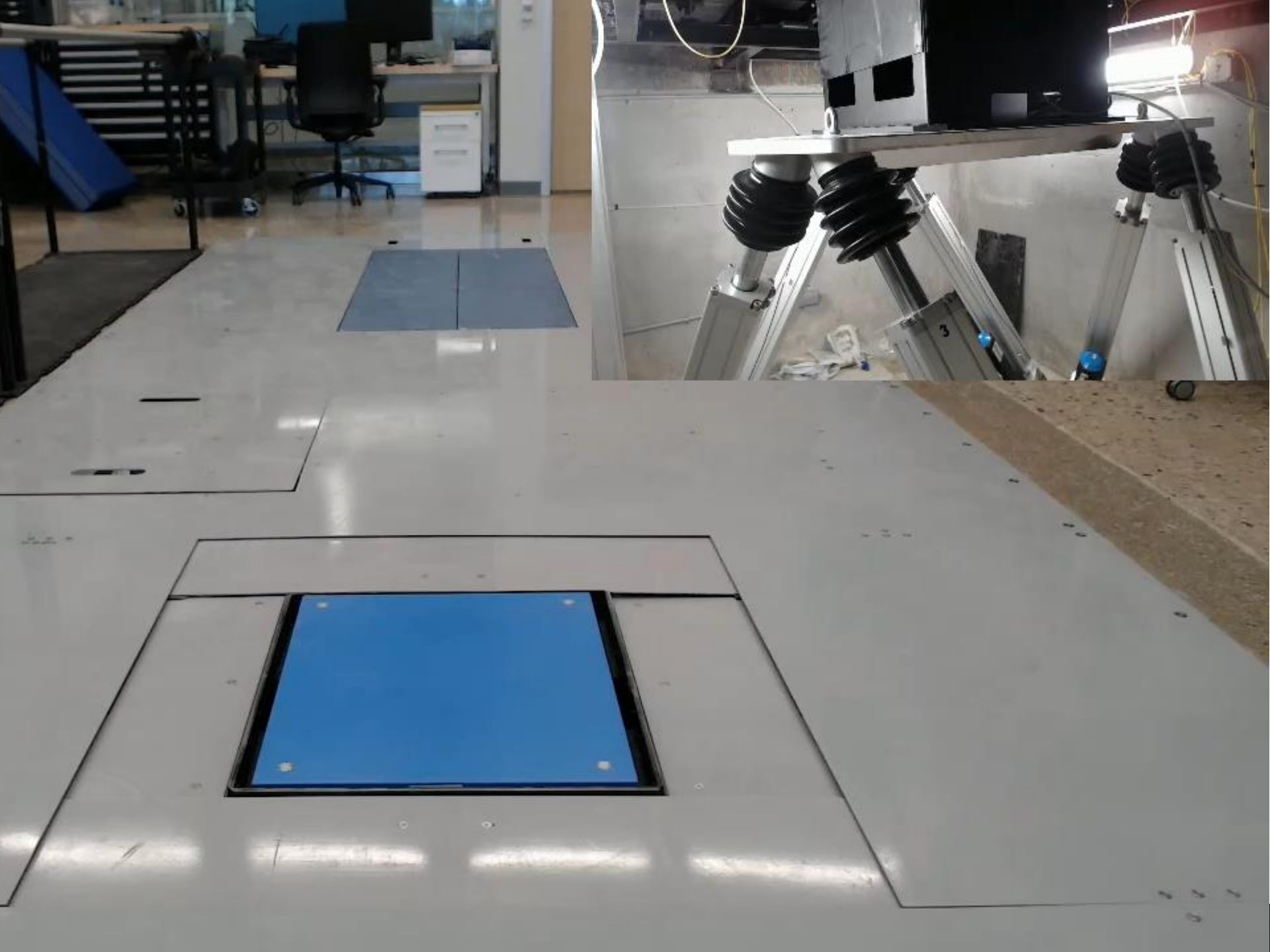
- Lunch during / before the competition?
- HW 5 – would you like an extension?
- Report info will be posted

Final Competition

- Last lecture – Thursday December 8th
- The competition will be in the FRB atrium
- Main goal: assess and compare balance / steering controllers
- Your team / ball-bot will be scored on four tasks
- **Be ready when class starts with your ball-bots charged and connected**
- We will compete as well—if you beat us, you get an automatic A on the project
- Wear your ROB 311 shirts!

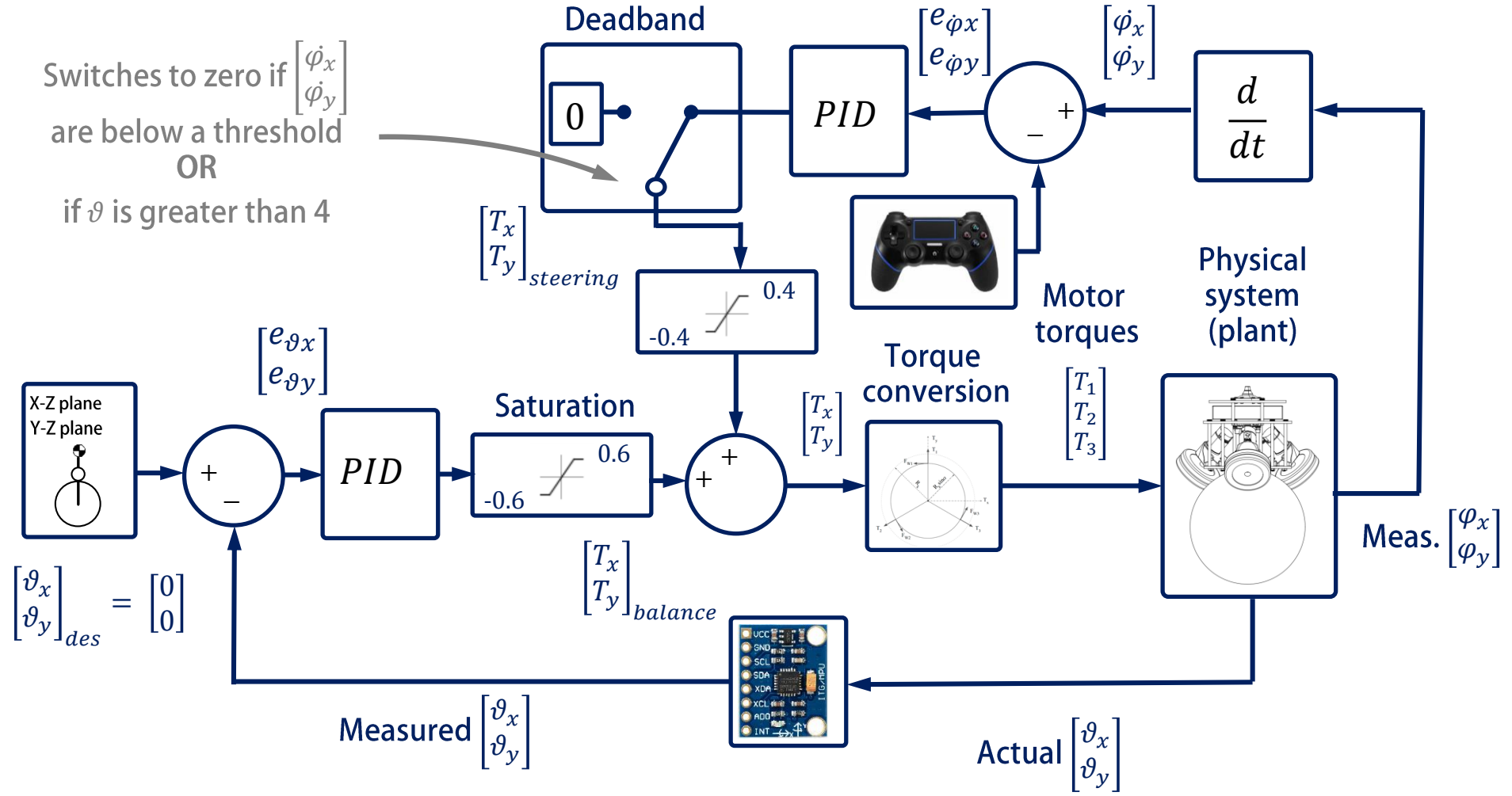
Events

- ~10 minutes of balancing—all ball-bots at once; last ball standing
- ~2 min max z-axis angular velocity
- ~2 min balancing with perturbations
- ~4 min steering around a 4’ x 4’ square loop

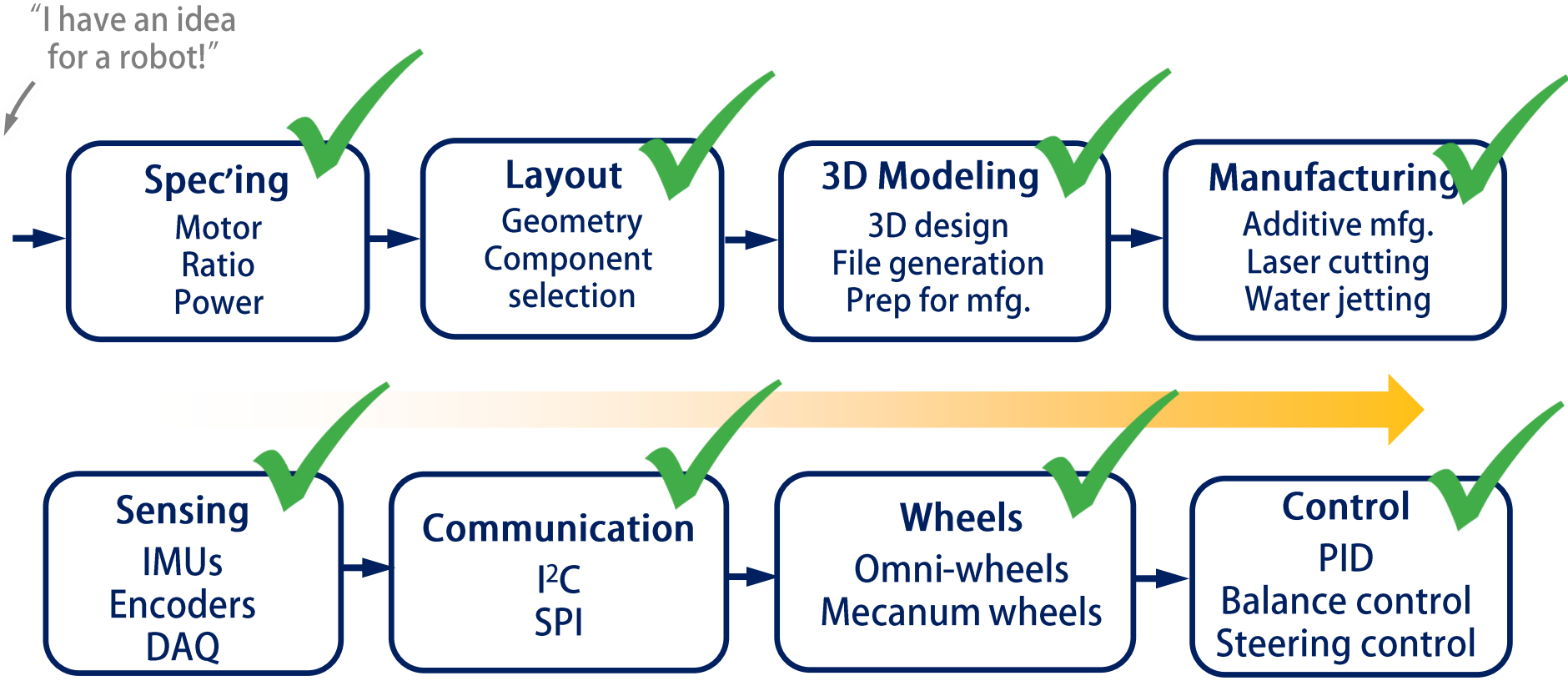


Now We Put it All Together

- Lets add all the components from today so far
- Where does the velocity reference come from?



What Did You Learn?



- You have learned how to build robots and make them move!
- I'm looking forward to seeing the cool things you do with this knowledge
- May the best ball-bot win!