SPRINT 5

Getting the robot to balance and improving RC

LAST WEEK

Time spent: 12h

What I learned

- My robot survives falling from the ball
- Magnetometer is more accurate than I thought

BIGGEST SUCCESS

Make robot balance and move on ball

BIGGEST FAILURE

Lots of time spent into trying to make it balance more stable without any success

SPRINT OVERVIEW

- **Planned**:
  - 13 Cards (+2 added after previous done)
  - 33h (+6h) = 39h
- **Current status**:
  - 15 Cards done
  - 41h

TIME ESTIMATES

- 10 cards matched **exactly**
- 2 cards **+0.5h**
- 2 cards **+1h** (position constraint, advanced movement)
- 1 card **-1h** (weekly meeting)

BEST CARDS

IMPLEMENT MOVEMENT ON BALL

movement works as expected (even though window to instability is small)

IMPLEMENT ADVANCED ROBOT CONTROLL

Implementing different movement patterns was fun and took expected time

WORST CARDS

FIX VELOCITY MEASUREMENT

- unsuccessful (but time boxed, so no overtime)
- reason: messy hardware signal can't be fixed enough by software (e.g. LP filter)

FIX BALANCING ISSUES

- Various approaches tried
- none seemed to produce significant improvements
- reason: maybe motors too weak?

CONCLUSION

- **final planned time:** 152.7h
- **final spent time**: 181.7h
- **biggest success**: hardware + pcb design
- **biggest failure**: motor encoders
- goal achieved 80%: balancing + movement works, but only well on carpet

FUTURE WORK

- Swap motors for stronger ones
- Ensure encoders are working properly on them
- Result: hopefully more stable balancing