

Creativity and Innovation

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About Me:

A guy who likes Robots and fun technical projects

(pretty much all of them)

- 1625, 3928, 148, 1296, 971
- NASA Lunar mining competition
- Power Racing Series
- Battlebots



cre·a·tiv·i·ty

ˌkrēāˈtɪvədē/

noun

1. the use of the imagination or original ideas, especially in the production of an artistic work.



WHY?



Example Reasons “Why”

- Entirely new problem that existing solutions don't work on or seem suboptimal
- You need to fit something somewhere difficult
- You have interesting resource limitations (money, machines, people, time)
- Aiming for exponential vs incremental improvements

- It's fun



How it applies to Robots:

Unique approaches to overall robot layout/architecture

Small very useful details in systems can enable big improvements

Strategies for gameplay

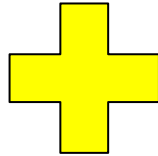


A few examples to discuss

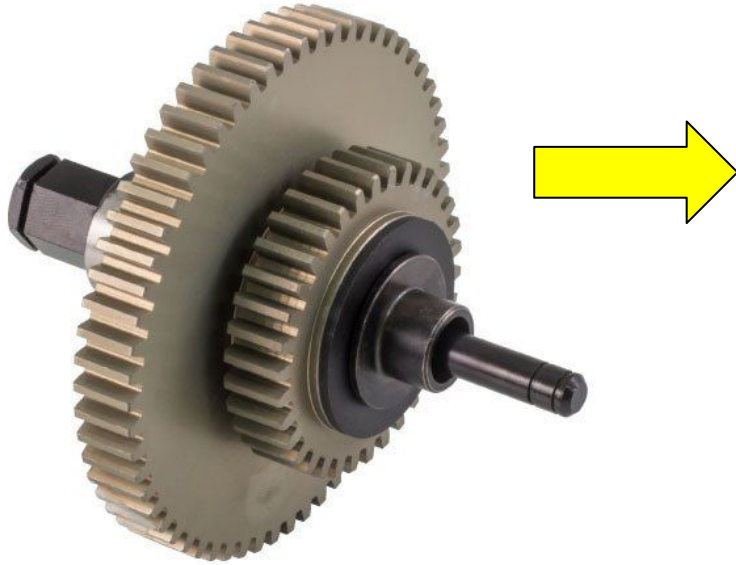
- Magical centering rollers
- Repurposing dog shifters to use chain output
- Motor inside wheel swerve module
- Compact butterfly module
- Differential Swerve module
- Can Crossbows
- Weird shaped double back inverted gearbox
- Odd 2-speed gearbox



Centering intake Proto

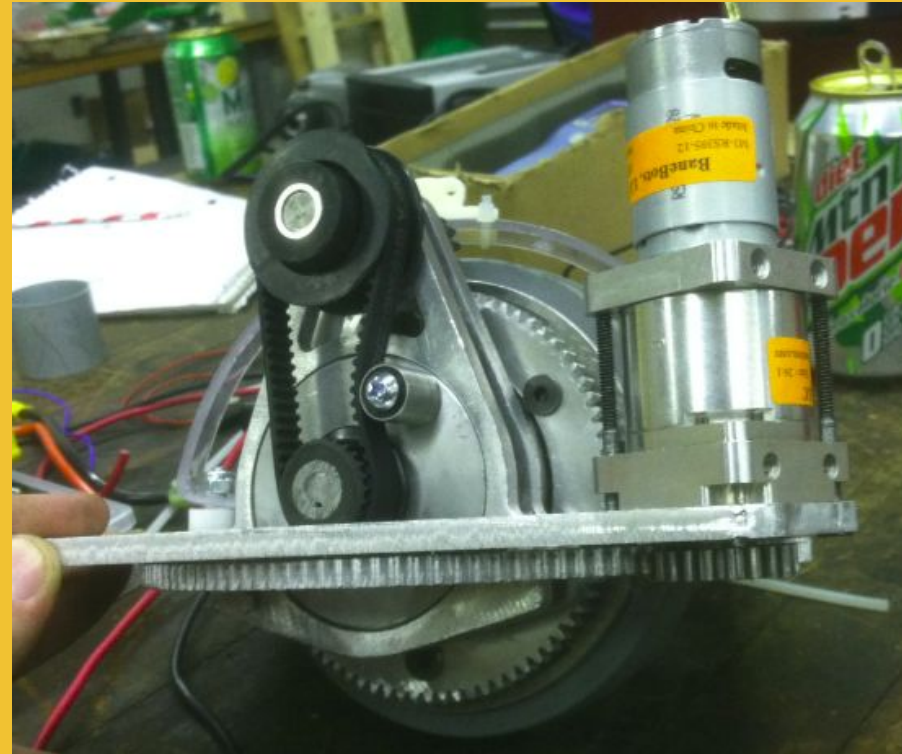


Ball shifter inverted



Motor in wheel Swerve

- Why: Shrink volume of the module to an absolute minimum



- (Ran 2012, Team 3928 Neutrino)

Differential Swerve

- Why: Enable clean use of 775pros in a drivetrain vs 10+motors
- “Niche” FRC due to constraints



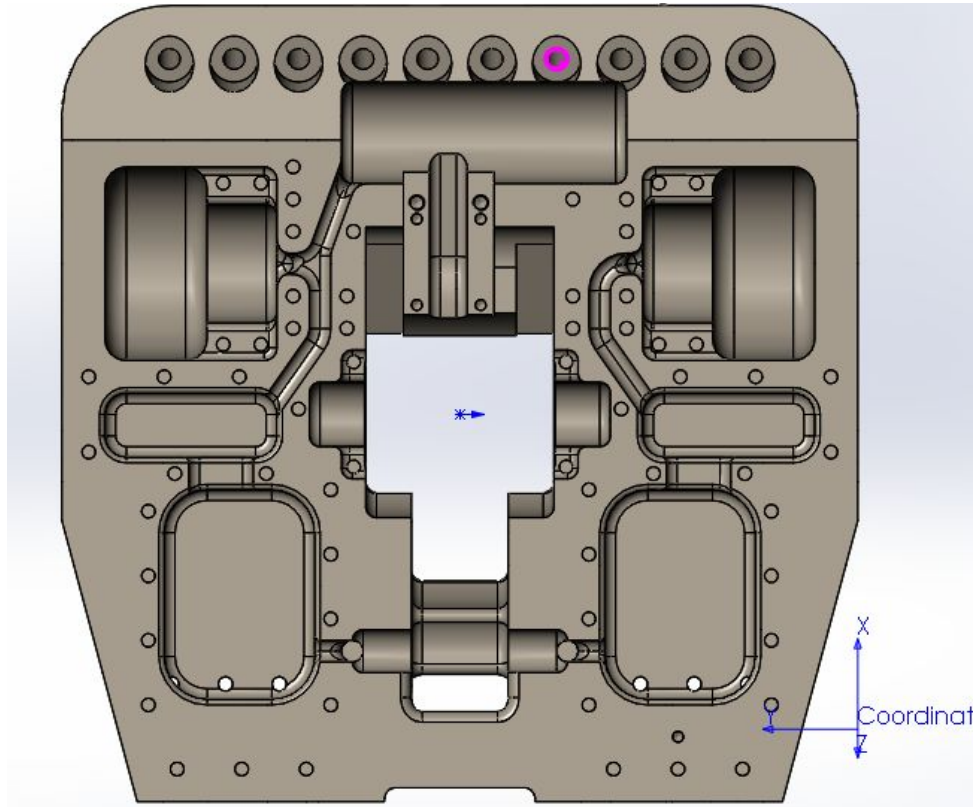
- (Not yet complete)

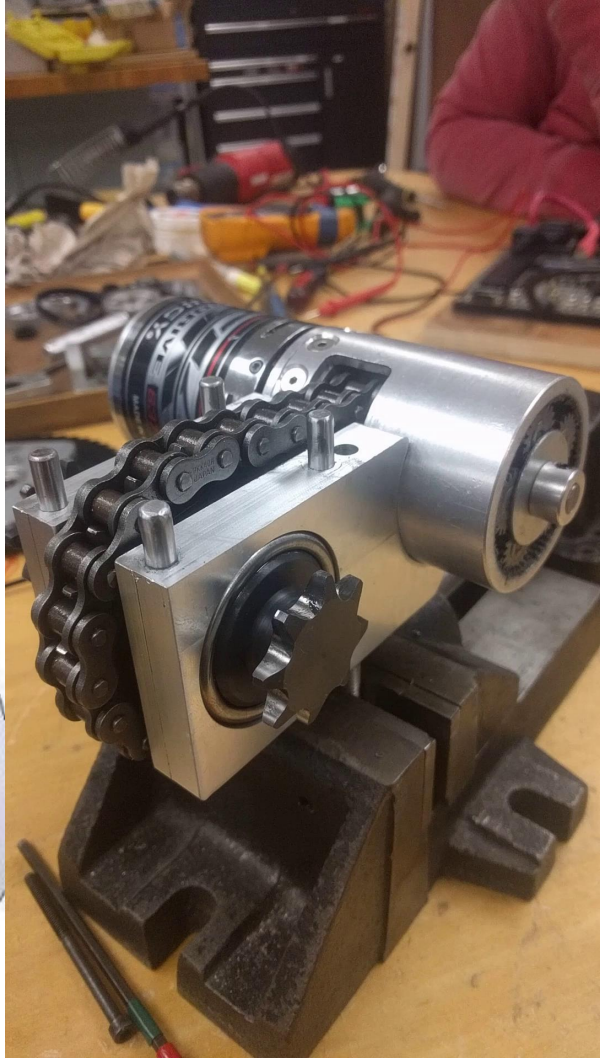
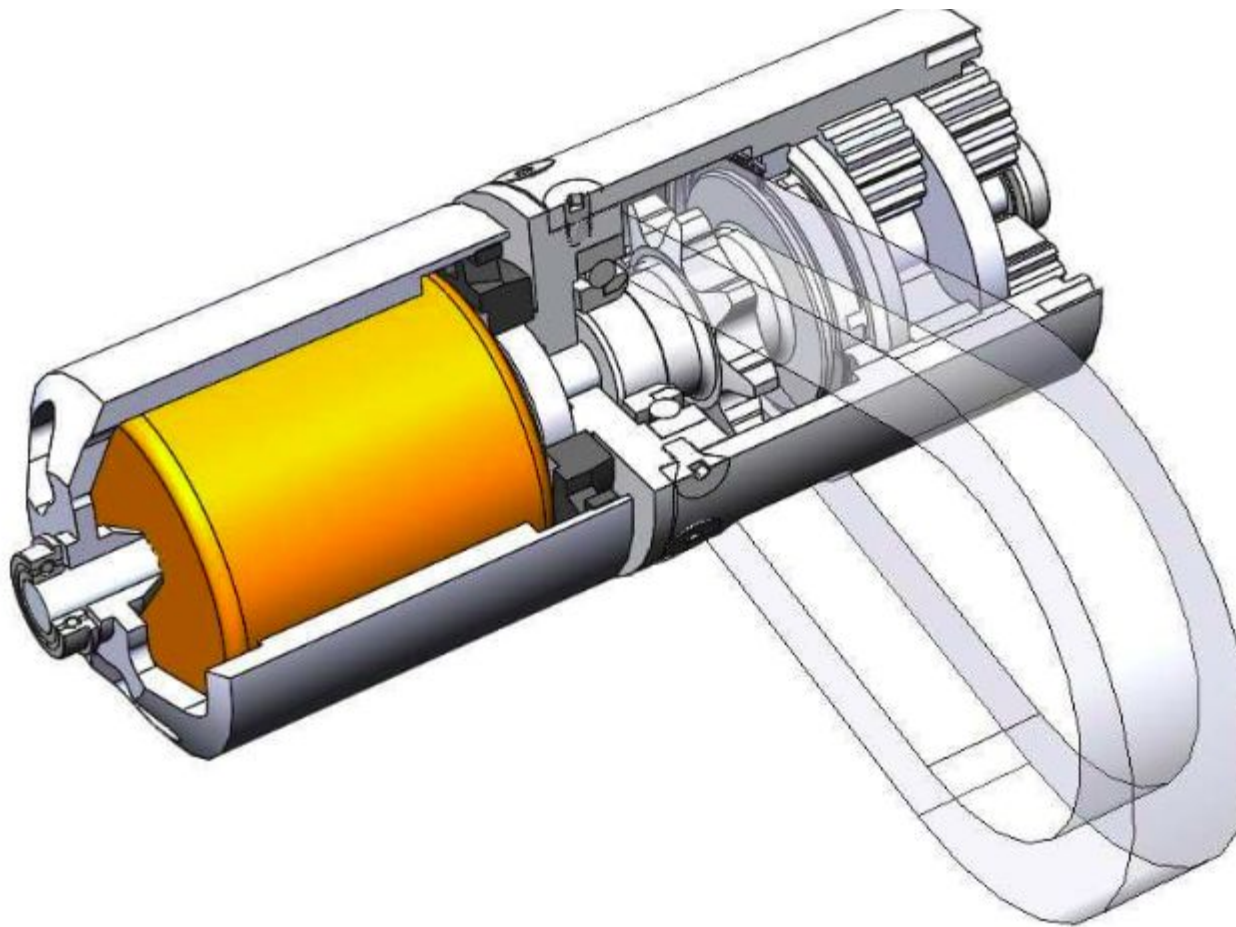


Crossbows?

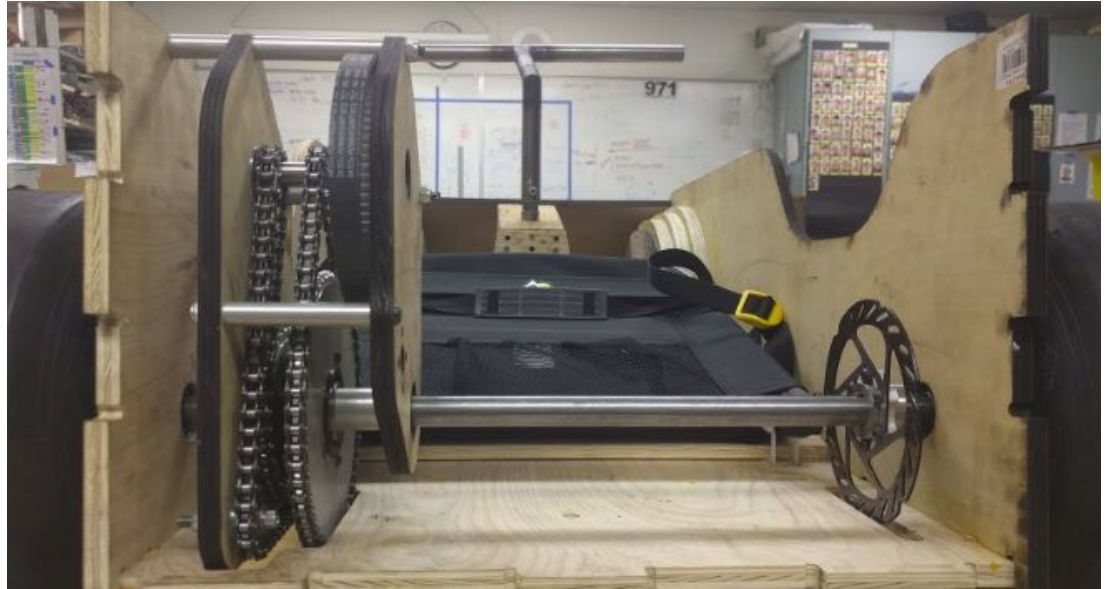
(2015 fun)

Fitting gearboxes in weird places

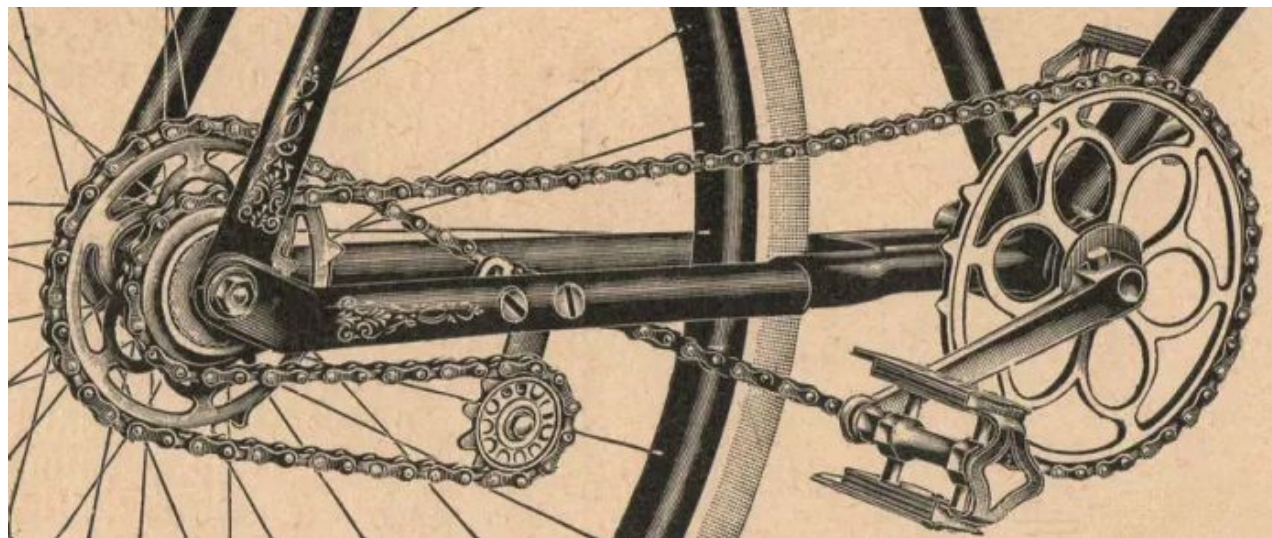




Unconventional 2-speed



Retro-Direct 2-Speed



Recapping Some “Methods”

- Entertain all ideas (almost all, monkeys wrapped in tin foil is just a bad idea)
- During brainstorming let your mind wander when you sense a spark
- If you're confused, try explaining what you're picturing back to the teammate you're talking to, sometimes great ideas come from misunderstandings
- Isolation and engaging in “mindless” activities can help your brain wander
- Find existing technologies that could be applied



Re-cap

- If you are determined to be creative, agree as a team to go for it
- Make sure you own up to your true reasoning
- Analyze the benefits, really hard
- Have some fun, you're building robots to Inspire and learn



Thank You!

