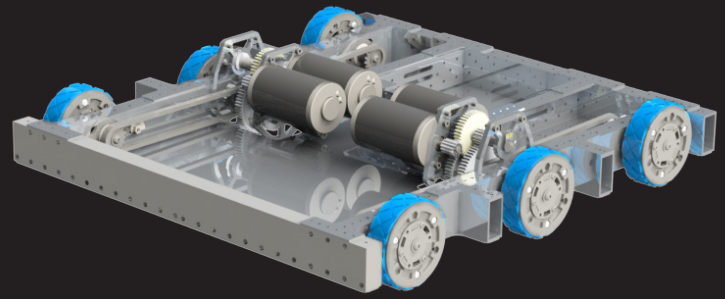


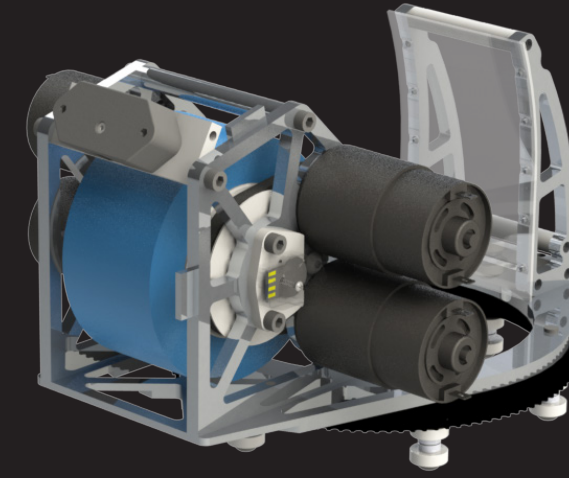
# TEAM 1114 PRESENTS: **SIMBOT ALI**



## Drive

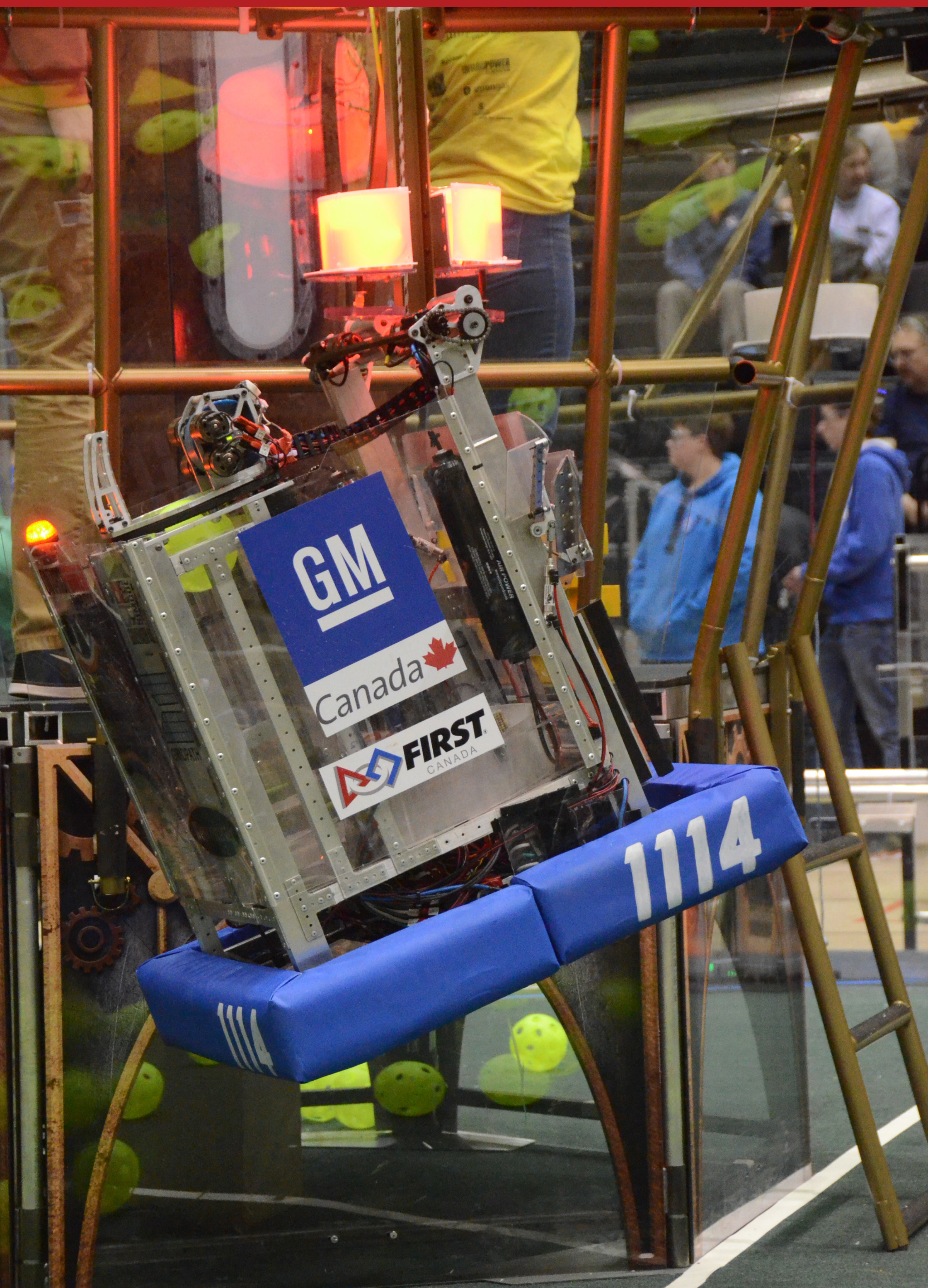


- Riveted box-tube VersaFrame chassis with a 1/16" aluminum baseplate
- Six wheeled West Coast drive utilizing 4" x 1" VEXpro Traction Wheels
- Powered by four CIM motors; power transmission via custom two speed transmission, utilizing WCP Dog shifter and roller chain drive
- Approximate top speeds of 6 ft/s (low gear) and 18 ft/s (high gear)

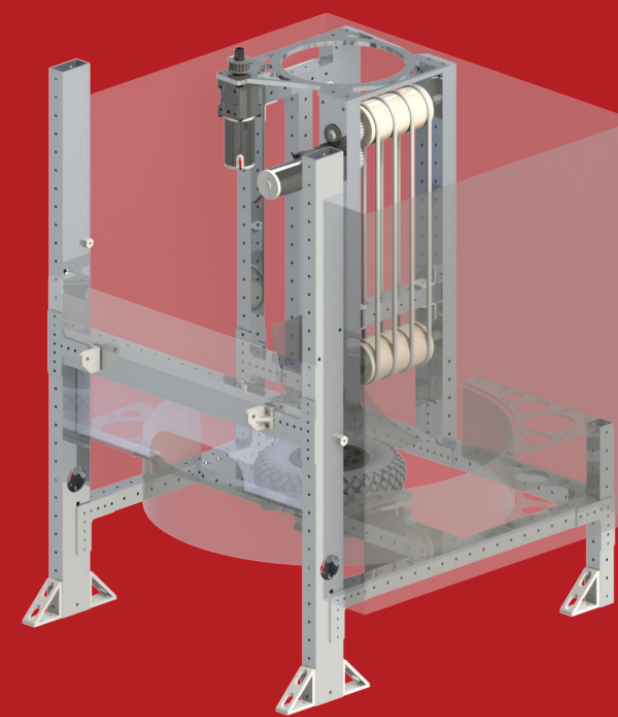


## Shooter

- Made from 1/4 alum CNC fabricated plates
- 4" urethane flywheel powered by four 775pro motors through a 3:1 timing belt reduction
- 0.375" compression on the ball and ~20deg arc of contact
- Turret is powered by a BAG Motor using a 50:1 VersaPlanetary Gearbox and a 7:1 timing belt
- Turret rotates on a custom radial bearing track, through a 130t delrin pulley

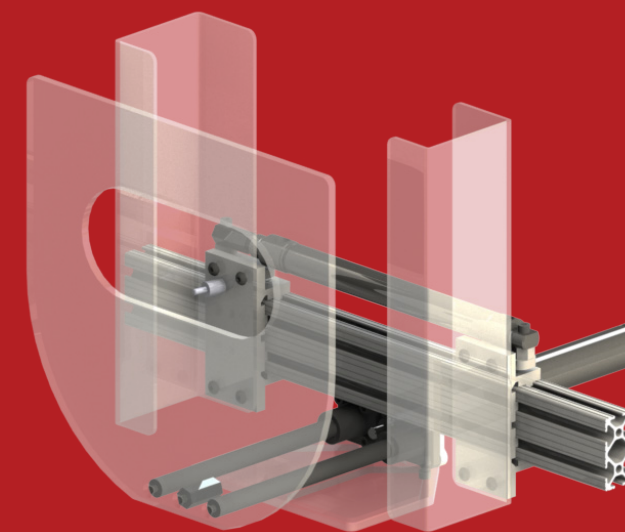


## Elevator/Hopper



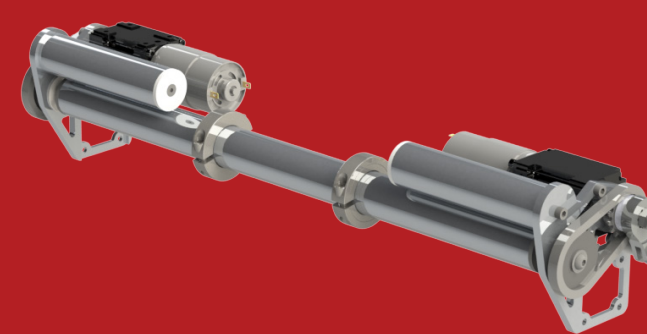
- Balls are loaded in the front through a lexan ramp that extends over the bumpers
- An 8 inch "blender" pneumatic tire directs balls into a polycord elevator towards the shooter
- Blender is powered by a Mini CIM Motor through a 4:1 gear reduction
- The polycord elevator is powered by a 775pro motor through a 9:1 VersaPlanetary Gearbox on a 2" polycarbonate drum

## Gear Pouch



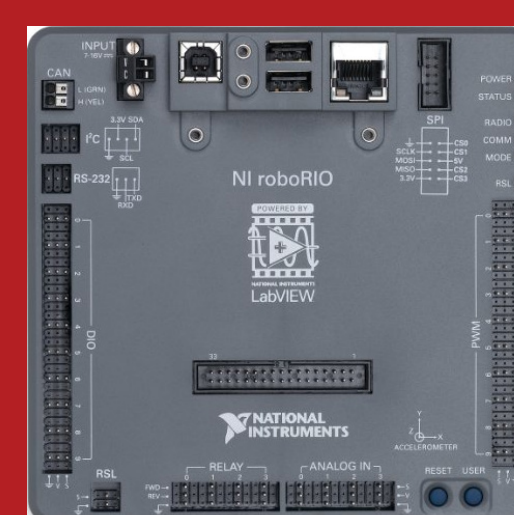
- Gears are human loaded at the front of the robot through a pneumatically actuated lexan ramp
- Two lexan side plates pneumatically actuate to center and retain the gear
- A 6" stroke cylinder pushes the gear onto the spring peg

## Hanger



- 1" aluminum tube wrapped with hardside velcro catches a 3/8" rope
- Powered by two 775pro motors through a 25:1 VersaPlanetary Gearbox and a chain ratio for an overall ~34:1 reduction
- Theoretical climb speed of 1 second
- Ratchet wrench is used to stop backdriving

## Controls



- Camera to automatically aim at the target and change shooter speed relative to the distance to the goal
- Encoder and gyro-based feedback and feedforward drivetrain for reliable autonomous driving and position
- Turret angle controlled by motion profile and encoder
- PID shooter control for accurate velocity and rapid spin up

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**"Float like a butterfly, sting like a bee."  
- Muhammad Ali**