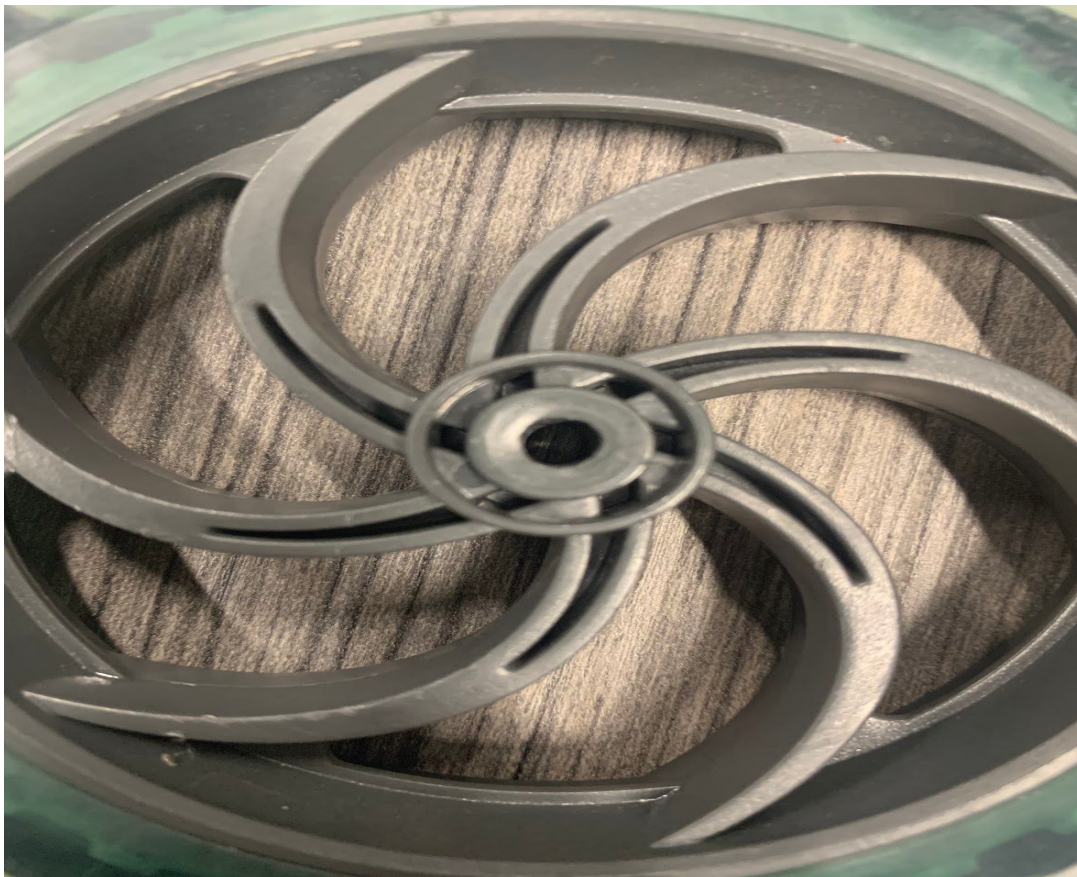


**EASTWOOD ROBOTICS  
TEAM 8787A  
PRESENTS:  
THE SHAFT INSERT STRENGTHENER**

One recurring problem has haunted our teams building abilities while preparing for VRC competition. The shaft inserts within wheels and gears experience excess strain and torque over time, as a result our wheels have become striped and impossible to reuse. This problem caused shafts to free spin and un-effectively turn the vital components we need. The amount of wheels we've had to scrap due to this pushed us to find solutions.

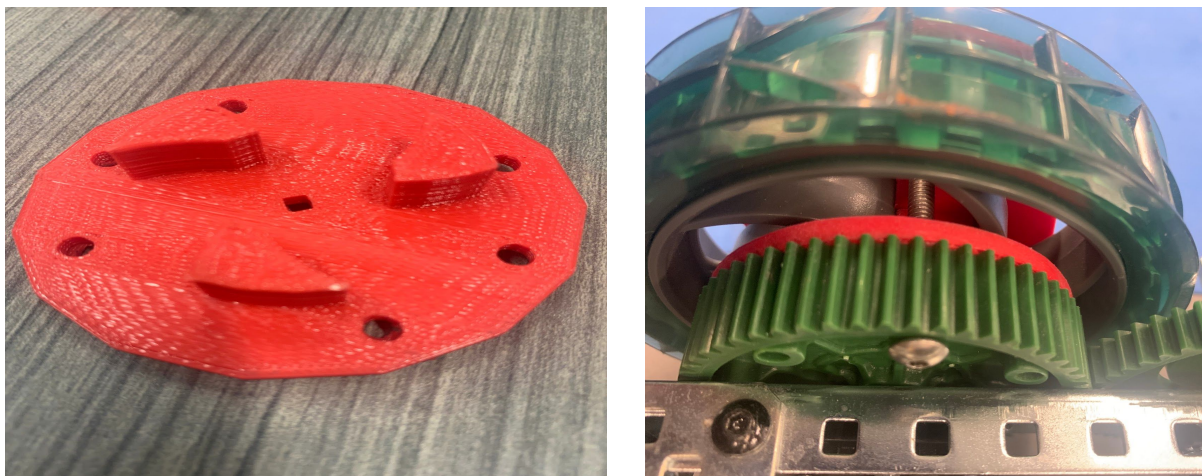


The metal shaft inserts provided by VEX was thought to address this; however this also proved ineffective. These inserts only stalled the

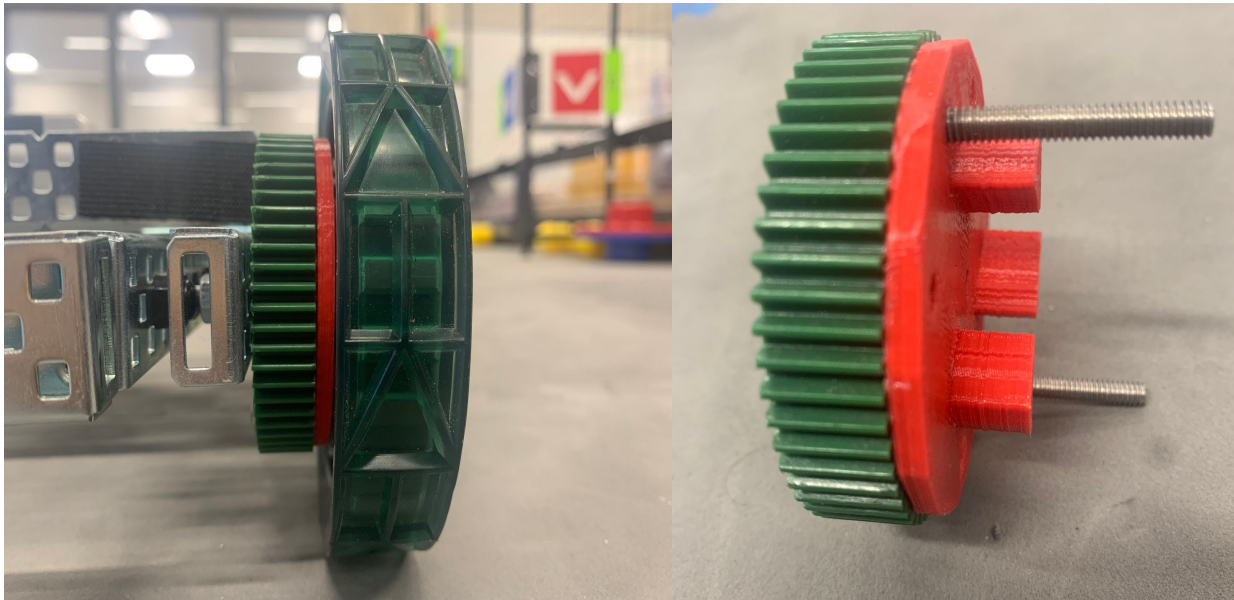
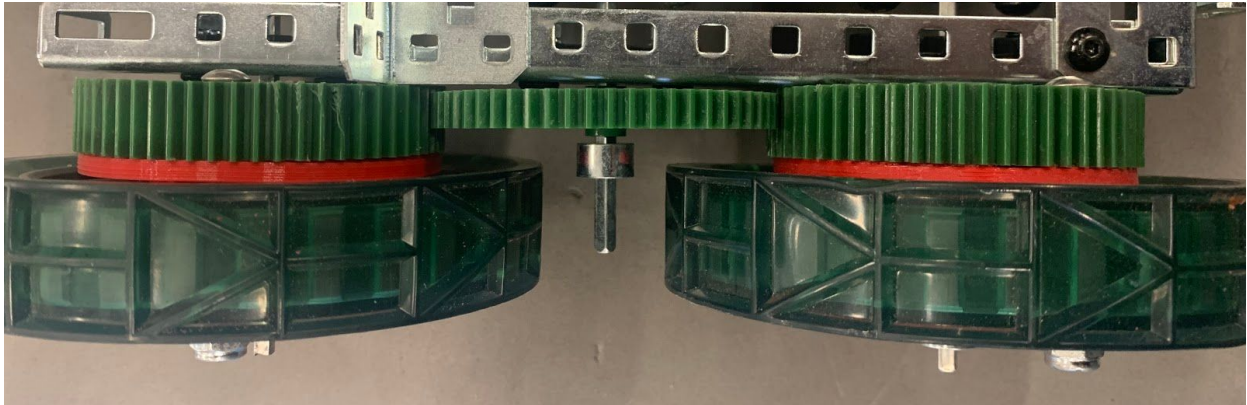
problem, and the outcome carried even more weight. Instead of only stripping the shaft portal, the metal insert striped the entire center of the wheel. Left with too little wheels to work with and ordering replacements motivated us to think of a solution of our own. Looking for influence we were impressed by the design of wheels in VEX IQ. These wheels allow gears to be directly attached to a wheel through pegs. As a result, one could add gears to a wheel to strengthen the the surface area of a shaft and create an overall better relationship between shafts, geers and wheels.



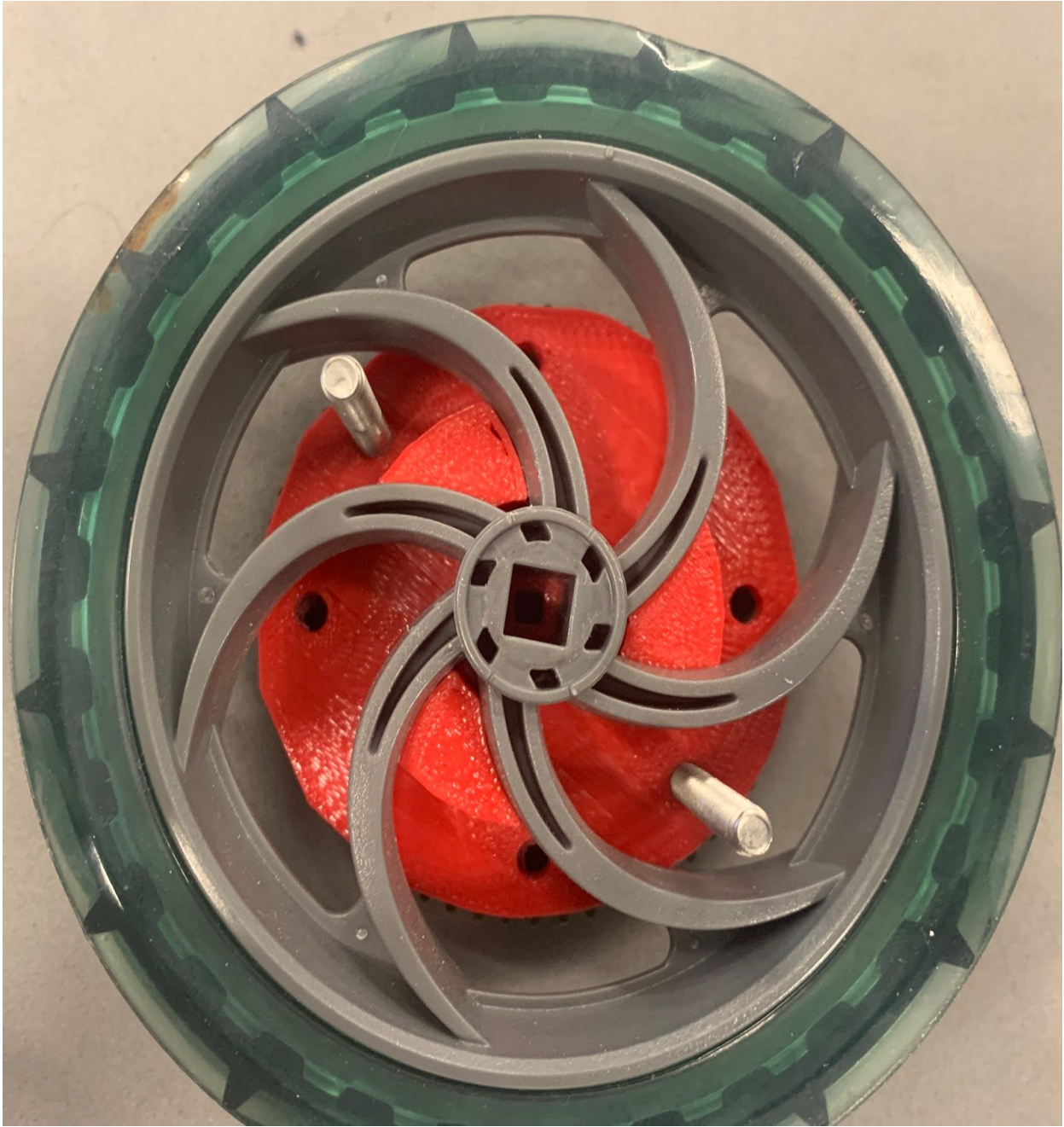
Translating this solution to VEX EDR helped us create what we labeled as a shaft insert strengthener. This part supports shafts and the components they direct by mobilizing all as one.

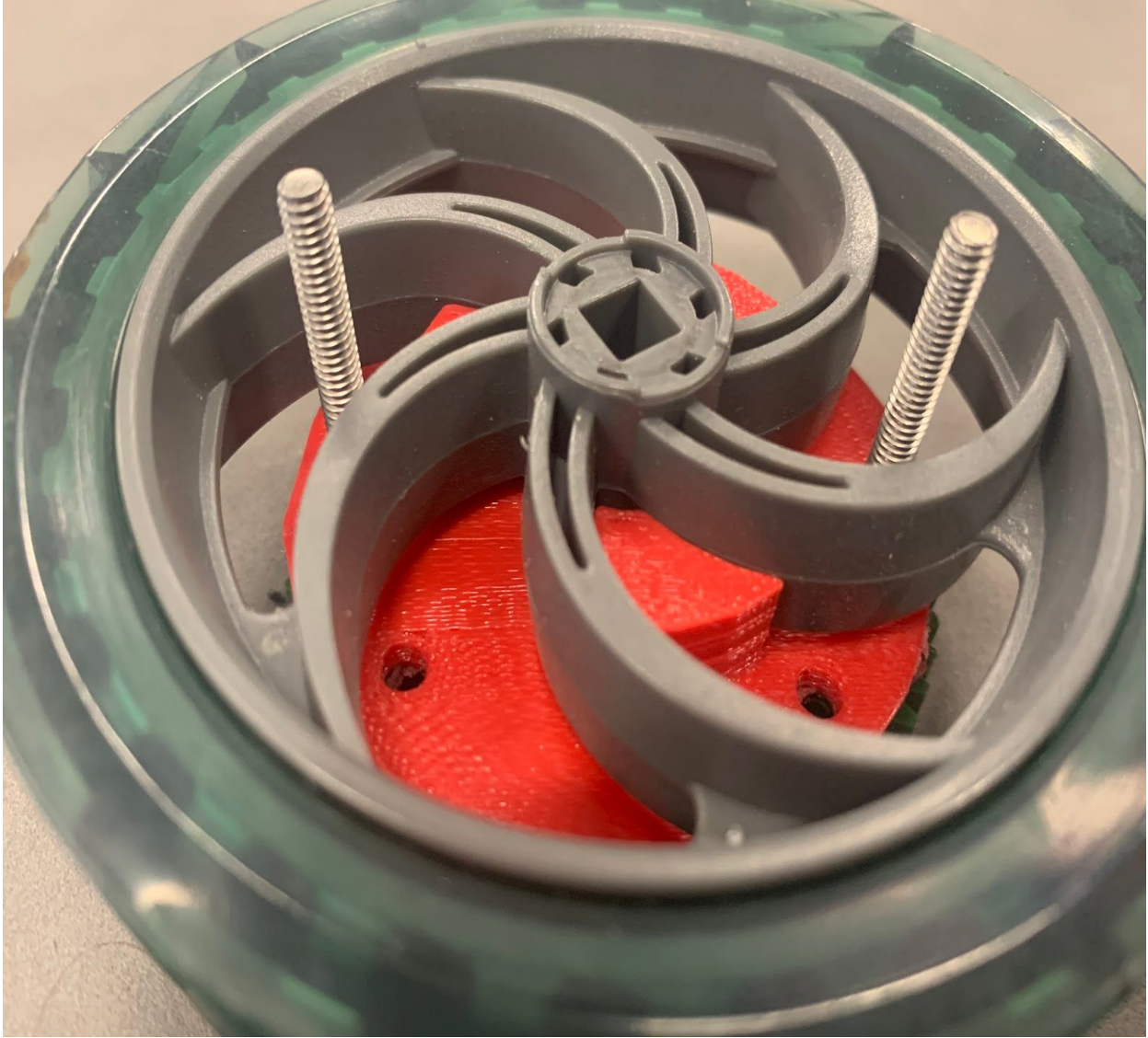


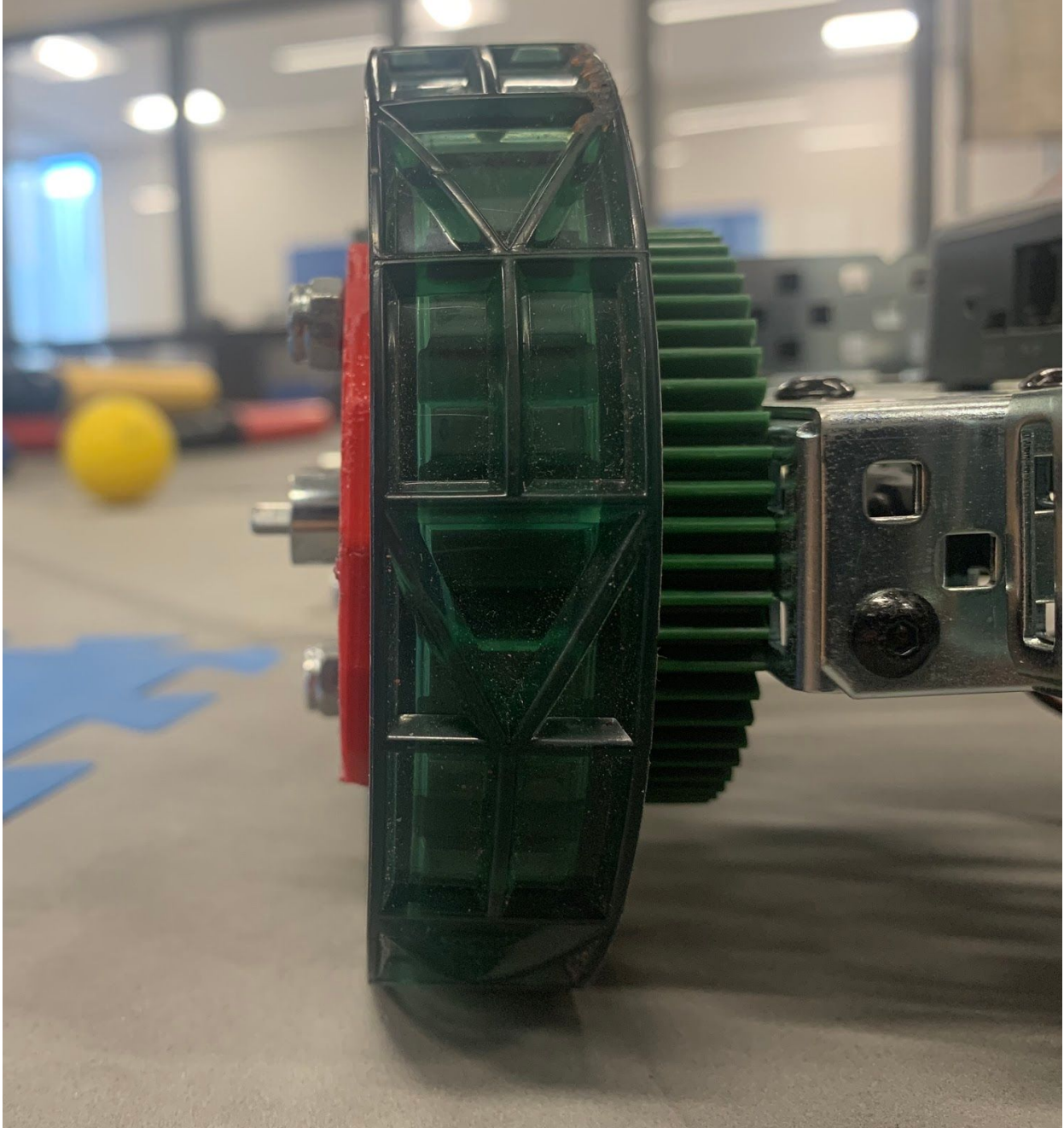
The shafts influence is amplified providing more surface area to turn a wheel.



The added functionality of it allows us to attach gears to the strengthener, creating a more solid and reliable motion. Every component of a wheels functionality is unified. Additionally, we were determined to be as efficient as possible when creating this part. We made it compact and sized to replace the need of shaft spacers, spacing a wheel and gear perfectly apart. As of now the part is adaptable with any four inch wheel and with a 60 and 80 tooth gear, adaptability we strive widen. Our part will allow us to finally put our scraped wheels to use, both preventing and fixing the damage done to shaft inserts.







Prototypes before success :



**We utilized Autodesk Inventor to complete all our designs**





