

## **Introduction**

The Add-on Shift Gears were designed as an alternative to traditional methods that teams have used to create multi speed gear trains. It seems to be common practice for teams to chamfer the edge of gears that are used to shift. These gear additions would allow teams to shift without the need to modify gears.

## **How the part would be used**

The Add-on Shift Gear would be used by one on each gear and two on the gear fixed to the shaft. The other gears on the same shaft as the shifting gear would use the round center gear inserts. This will allow them to rotate at all times on the same shaft. The center gear fixed to the shaft would move between the outer gears selecting which gear is engaged.

## **How Inventor 2017 was used**

Autodesk Inventor 2017 was used to design, assemble and render the Add-on Shift Gear. The Sketch, Extrude, Fillet, Chamfer, and Circular Pattern tools were used to create the two Shift Gears. All components were then brought into an assembly and constrained to create an example of how the Shift Gears could be used. Parts were converted to .stl files and were 3D printed.

## **Conclusion**

I have used and will continue to use Autodesk Inventor in the future. Having the ability to create a model of the robot is very beneficial when working on new ideas. I think that the use of CAD design will be very useful in the future to design and create visuals of products.