

**Make It Real CAD Engineering Challenge, Sponsored by
Autodesk®**

Hanging mechanism

TEAM:

UTGZ

Alejandro Cristobal Daniel Alberto

Gomez Hernandez Geovany Alberto

Ronquillo Romero Rosendo

Aguilar Santes Arturo

Vazquez Gallardo Jesús

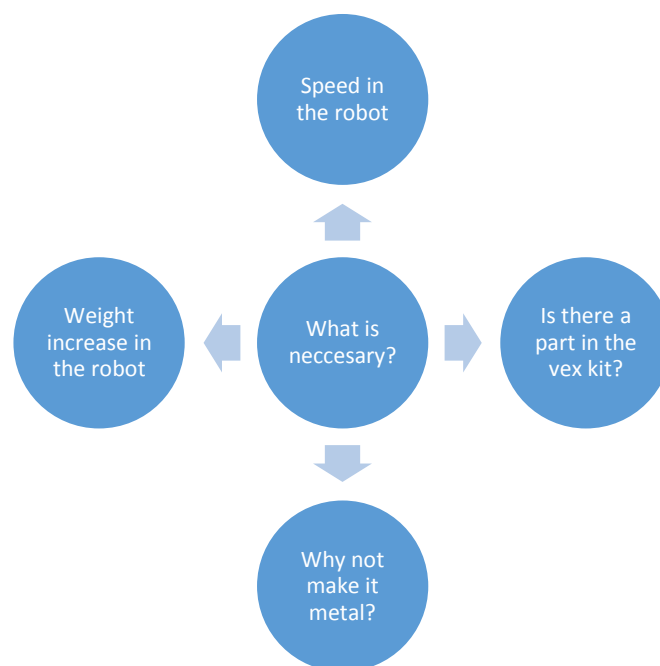
Becerra de Luna Alexis Ventura



AUTODESK®

The piece to be created is a type of hook which will have the function of supporting the robot when it tries to obtain the objective of high Hanging. For the creation of this piece influenced different factors such as: the requirements to meet in the competition, Robot weight, dimensions, etc. And to get with this the highest score and that the moment the robot performs the action this is met successfully.

For the creation of the piece the team took into account different aspects and conditions necessary for the competition.



After discussing the different ideas with the team, it was concluded that the Custom piece to be made was necessary because it could not be done by modifying some aluminum or iron bar since this only when trying to bend or cut it would only weaken the original structure and this was not effective. The piece we needed was not included in any kit distributed by vex, and one of the key points in our robot is that it is more compact, light and fast, and we did not want some of these features to be lost.

Everything indicated that the piece should be done with a 3D printer.

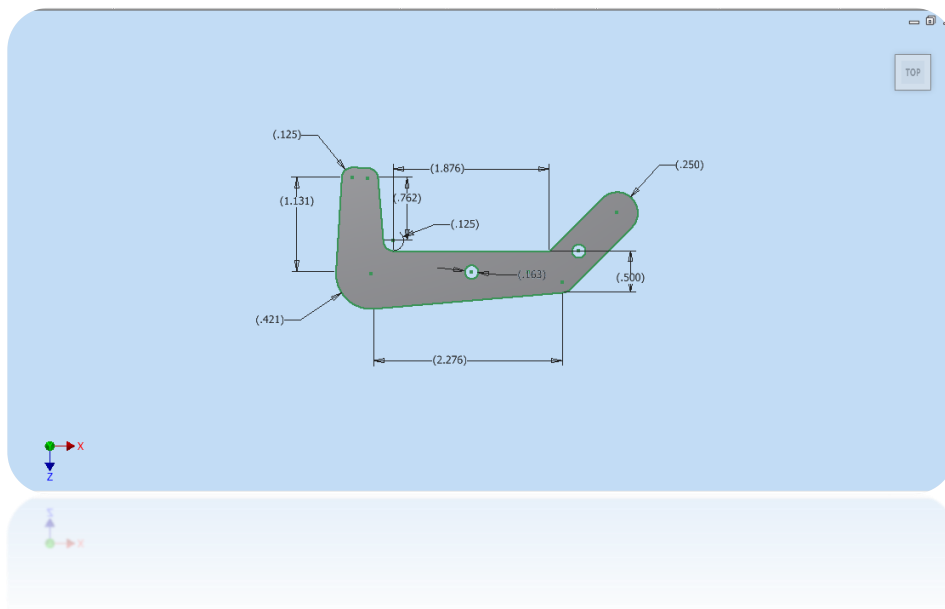
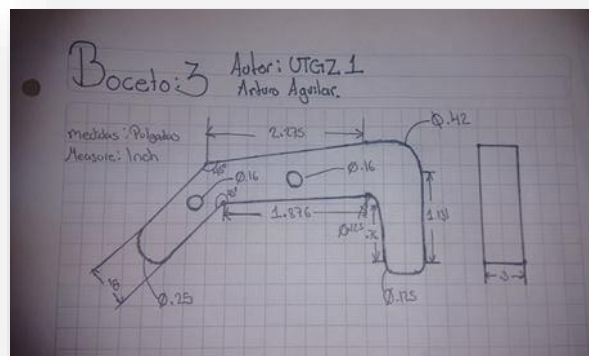
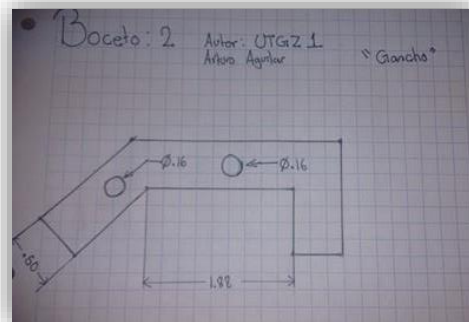
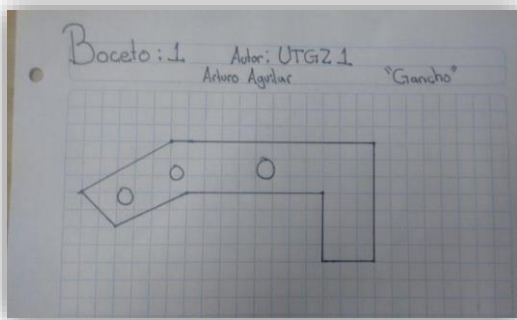
The material with which our piece 3D is made is with a filament type ABS, since this filament supports mechanical efforts of greater power, these characteristics are beneficial because this piece is in charge to keep elevated to our robot.

For the design of this piece was first made sketches by freehand so that the data and measurements were placed in 3D design software.

For the 3D design of this part has been used in Autodesk Inventor 2016 Software in its Student version where the final design has been made.

DESIGN PROCESS

Sketches of the piece



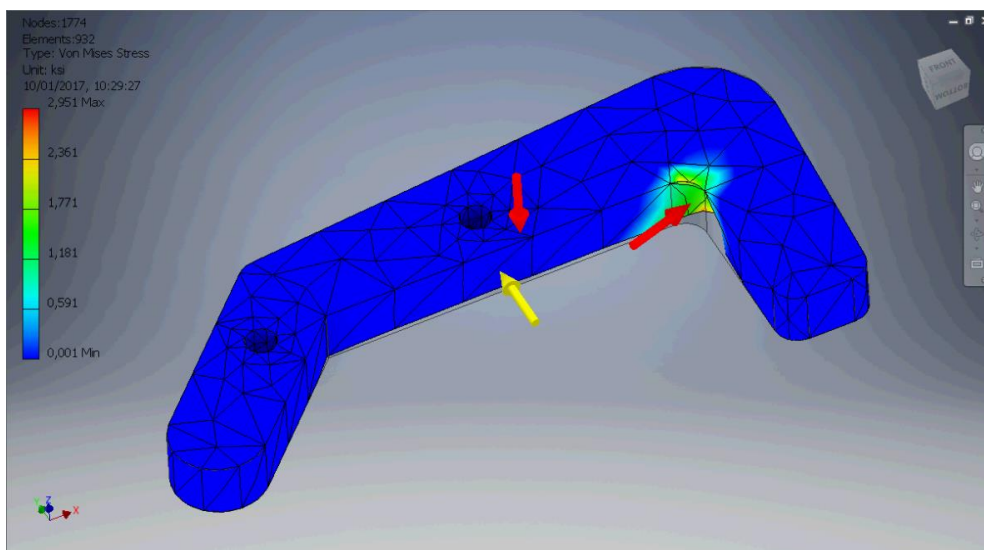


Autodesk Inventor 2016 Render

The 3D part will be activated by a pneumatic type actuation by a piston, this mechanism holds the robot to achieve the goal of high Hanging and get the highest score.

Resistance of the 3D piece

In Autodesk Inventor 2016 software, we performed the relevant tests in the "environment for stress analysis" to observe the strength of our printed part with the weight of the robot placed and these were the results:



Autodesk Inventor 2016-Stress Analysis

Printed Piece

