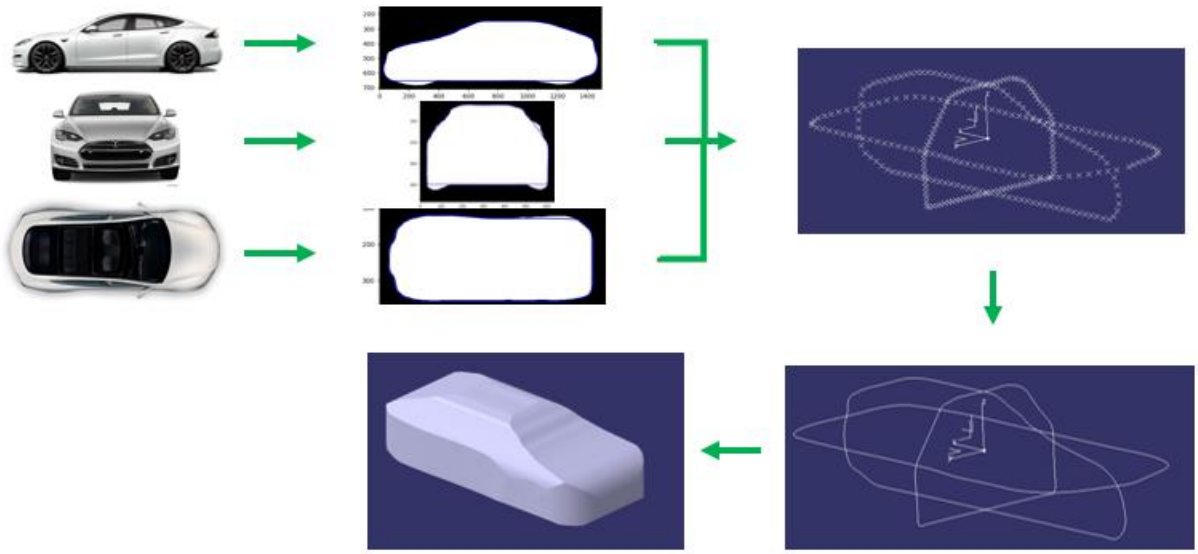
**The project is used as application documentation supplement to presents some of the authors technical and problem solving skills.* *Author: Nikola Franic*

Concept curves generator

Task: Extract the contours from a vehicle in front, side and top view. Then use contours to create rough 3d model of a vehicle exterior.

Description:

Idea of a project is to give a model picture of a side, front and top view of a vehicle. From the pictures transfer learning is applied where Mask_RCNN neural network model (pretrained model for object recognition that is pretrained on COCO dataset) is used. First image is given to a model where car shape is recognized. Then mask of a car is extracted and using OpenCV library contours are extracted. Because extracted contours points are not ideal for interpolation method is developed that extracts points for interpolation from contours. Method calculate intersection points for certain angle spacing values and sorts them in clockwise manner. Points are then interpolated, scaled and translated around origin point. Process is then repeated for all 3 views. Further some other methods where used to smoothen contours because results where little rough on the beginning. On the end points where exported in excel document. After teat in CATIA V5 macro is written that imports those points and creates splines. Splines are then used for extrusion and by intersecting all 3 extrusions rough 3d model of a car is given. Process can be seen on picture bellow and code can be found **here.**



Steps from images to 3d model