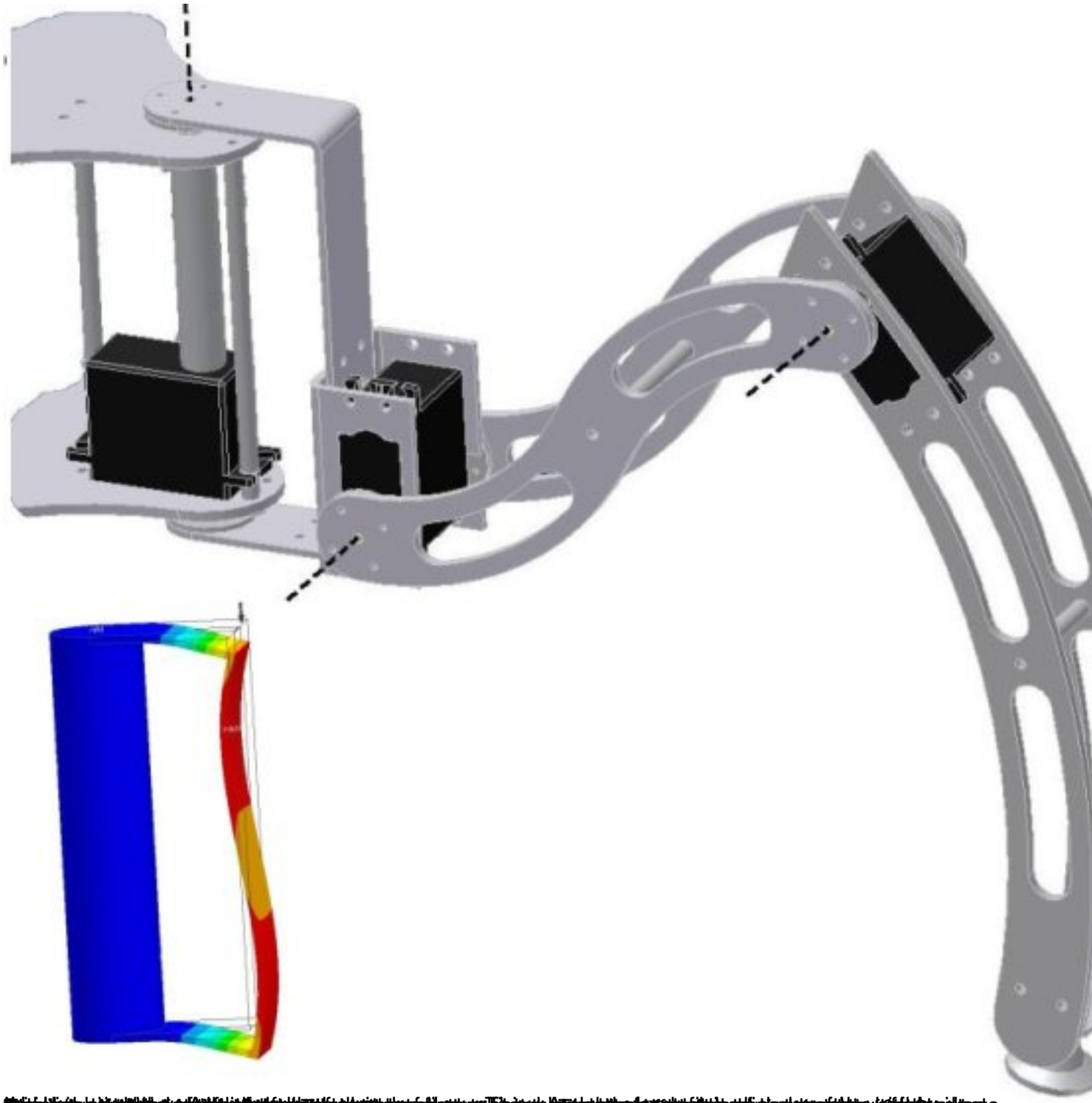
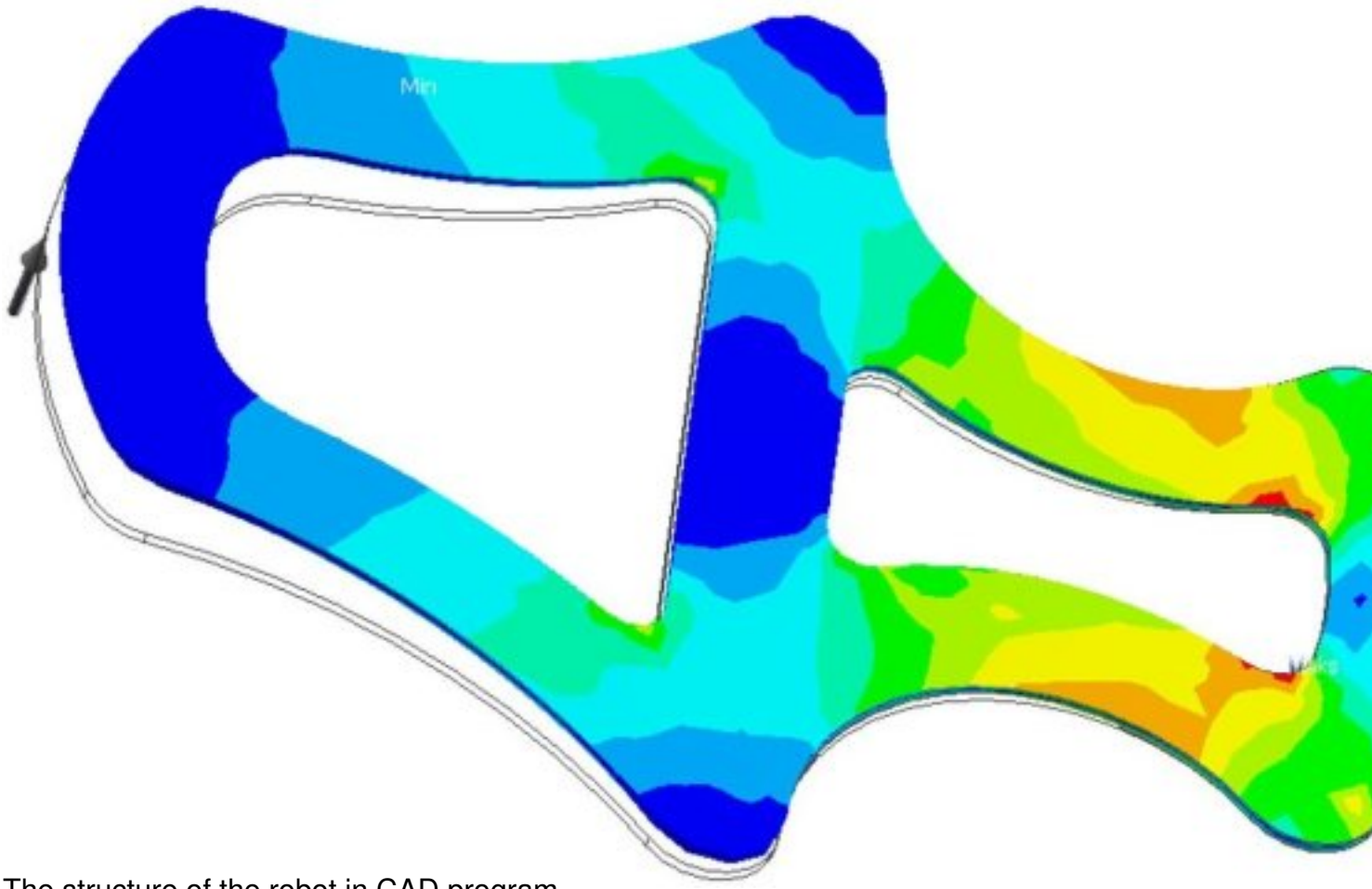
The Messor robot is based on the solutions which were well tested in the previous machine the Ragno robot. However a few details ought to be changed.

The dimensions of the leg were changed and adapted to the design requirements. The robot should be able to climb the normalized stairs where the maximal height of the stair is 0.20 m so the length of the last segment of the leg is equal to 0.20 m. The length of the first and the second segment is derived from the proportions of the insect leg segments which is 1:4:5 (segment1:segment2:segment3). The segments are counted from the trunk of the robot. The legs with such a dimensions require motors with higher torque. The Hitec robotics servomotors were used. The stall torque is 2.94 Nm. The design of the new robot leg with the simulation of stress is shown in figure below.





The structure of the robot in CAD program

and in the reality the robot looks like this.