

MEMBERS

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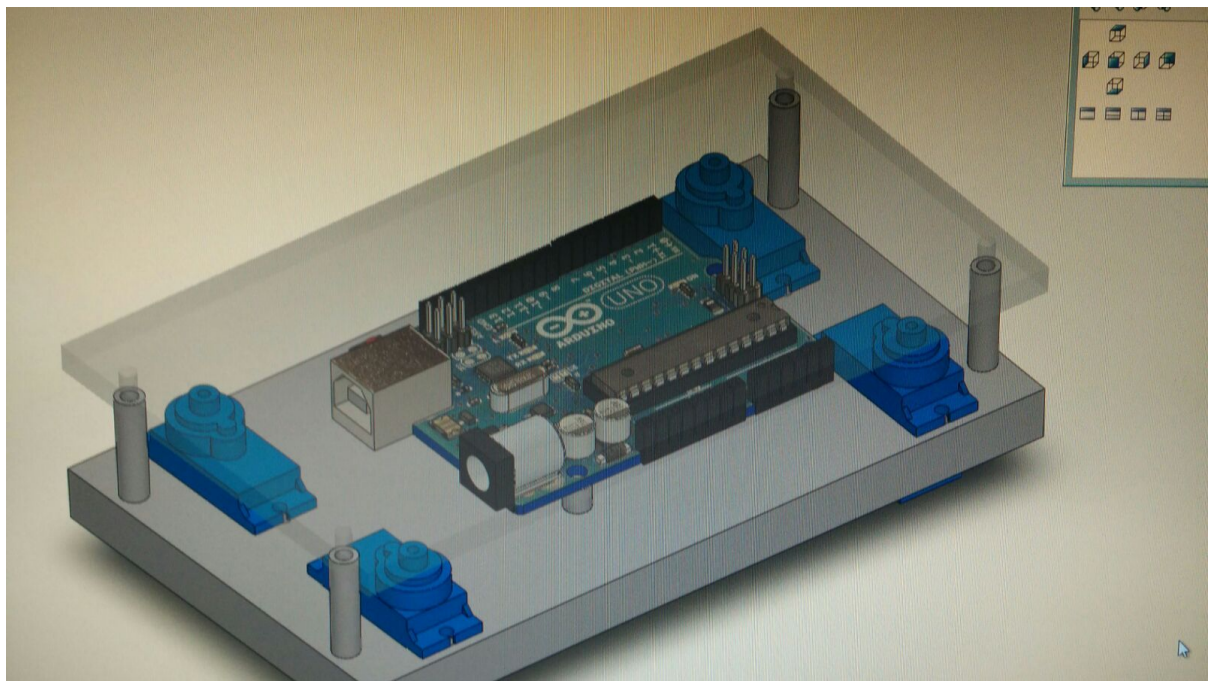
Joona Luodonpää

The TOL Menace

In a galaxy near, near here, three TOL students decided to take on the 3D Fabrication and Prototyping course...

Attack of the Spiders

Initially we had this creepy idea of a six-legged spider with a baby doll's head. We thought the idea was interesting in terms of realization. Especially the leg programming logic could have been cool. We started by modeling the servo and the base for it.

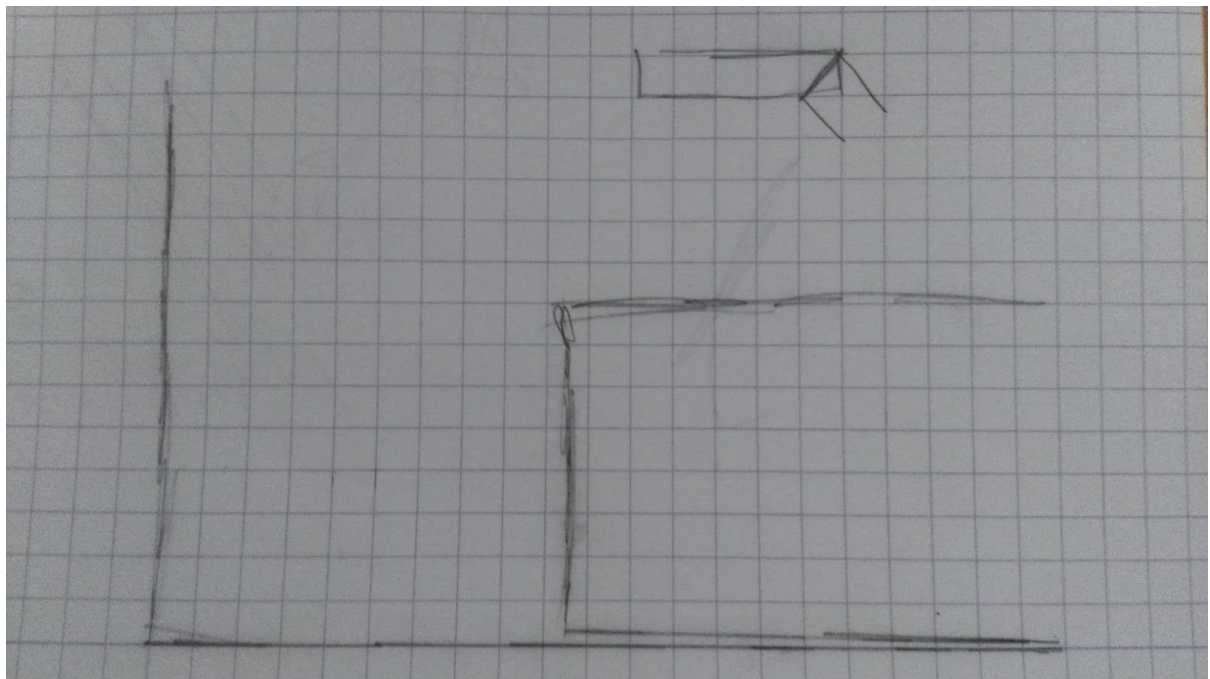


Revenge of the Spider

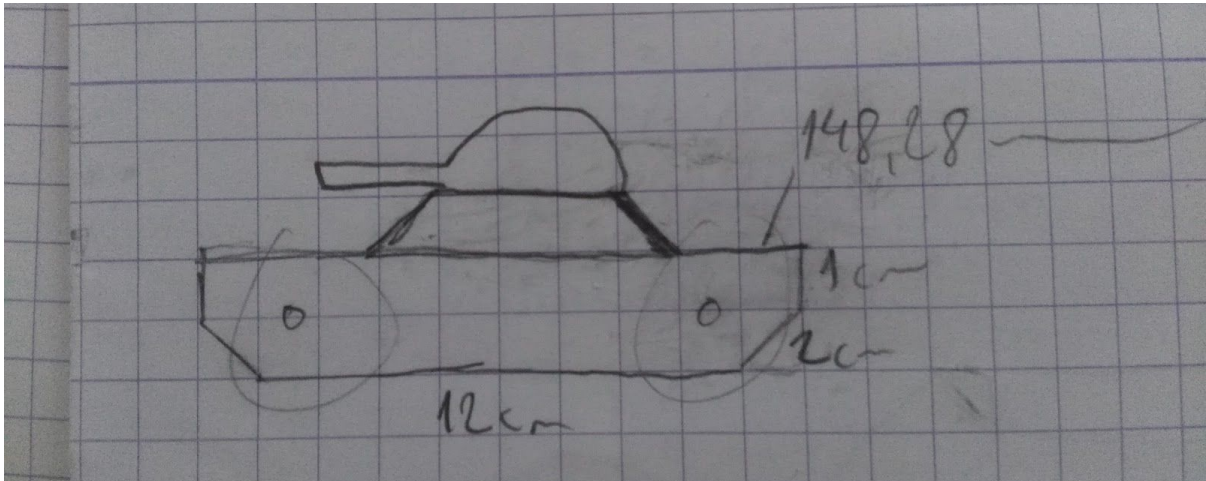
After the initial work, we had a couple week's break due to workload from other courses. Revisiting the idea, we arrived at the conclusion the current plan was too complicated and time-consuming to make in time.

A New Design

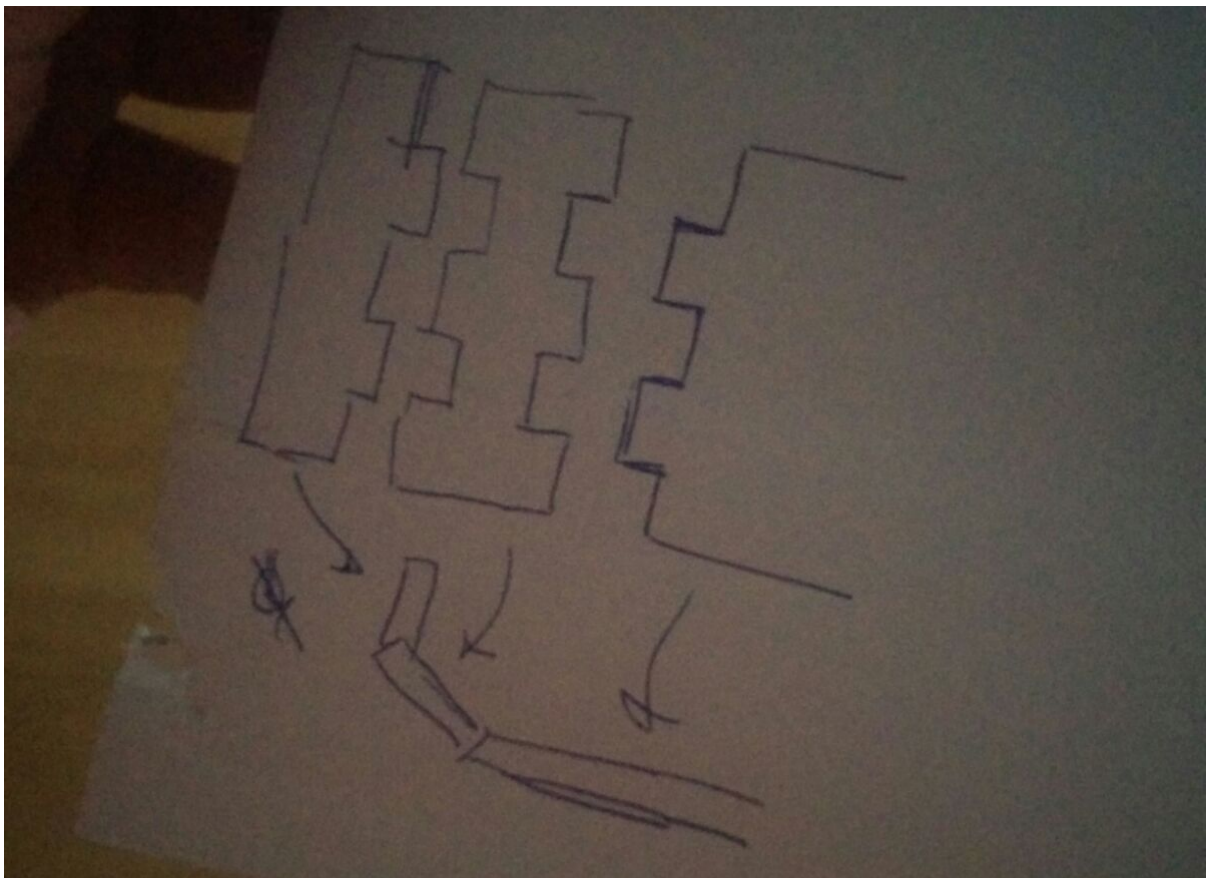
Having scratched the first idea, we began thinking about a new one. We still wanted something special, so we decided to include the possibility of moving the new robot, whatever it would be, via an Android application. After a lot of back and forth we decided to make a tank for our prototype. It would feature a turning tank gun implemented with a servo, and tank treads moving the tank. For extra features we thought about a LED at the end of the tank's gun. It would flash when a shooting button would be pressed on the Android application. A piezo would play a sound at the same time.



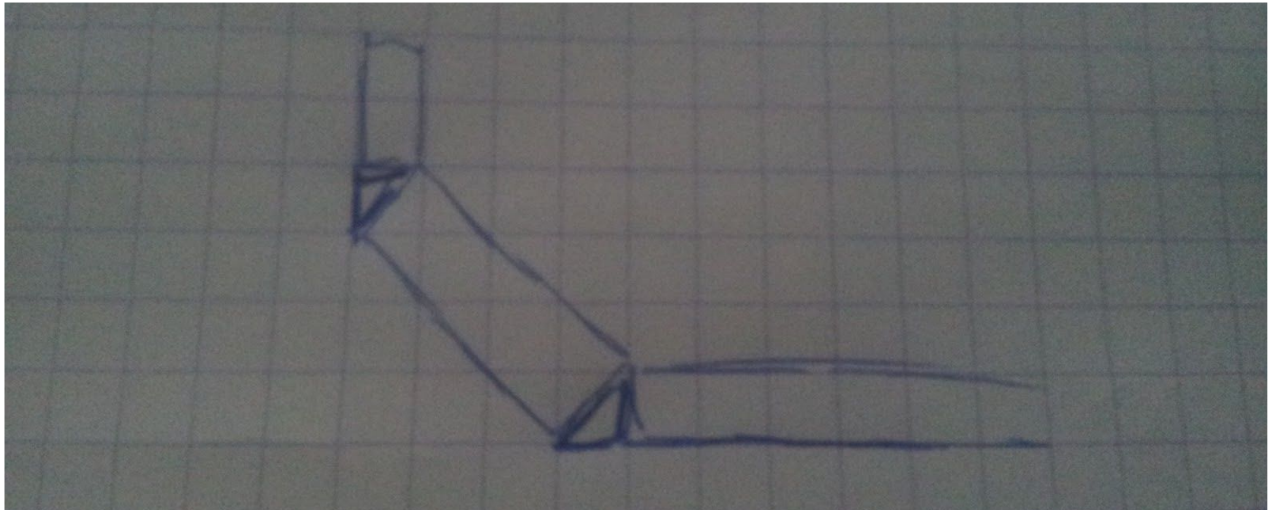
Initial sketching above. We started by drawing the bottom panel in a 1:1 scale to try and figure a preferred size.



Side view sketch above, with modifications added later (tyres; see next chapter). The gun tower would rotate and the top panel would be easily removable to ease access to the electrical components. Problems arose when we started thinking about the front and back panels, and how to connect all of them. Some solution ideas follow.

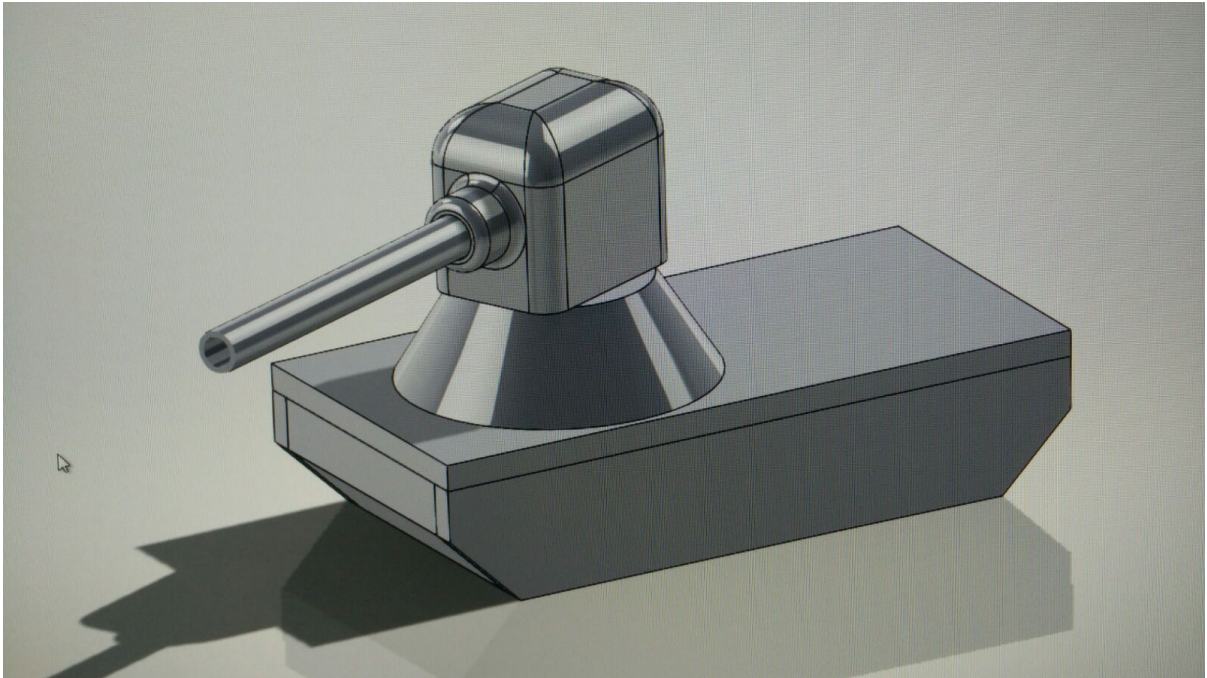


With this we could lock the parts together easily with no need for glue.



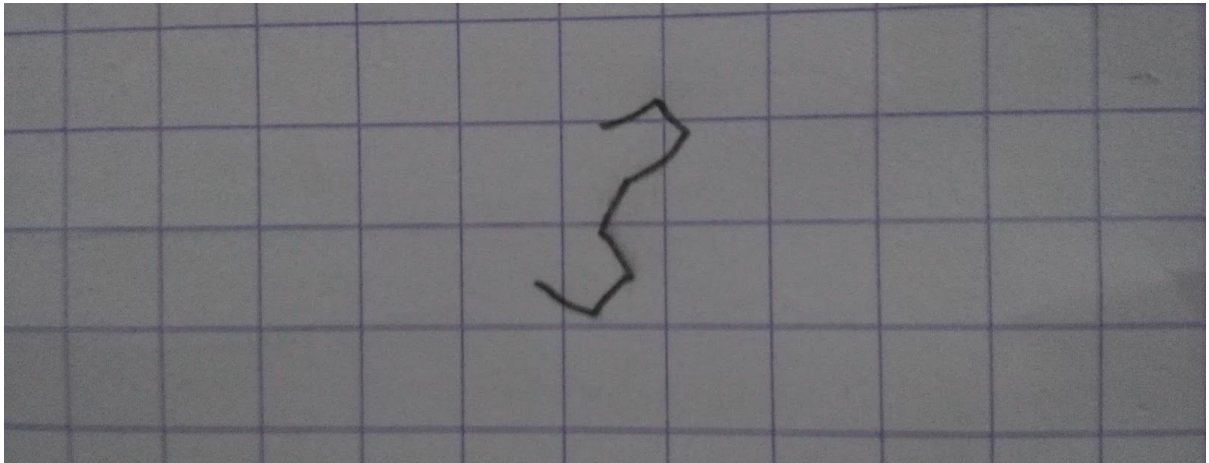
Another, flawed, idea.

We met multiple times and continued modeling on SolidWorks. Finally, we came to an almost finished design seen below.

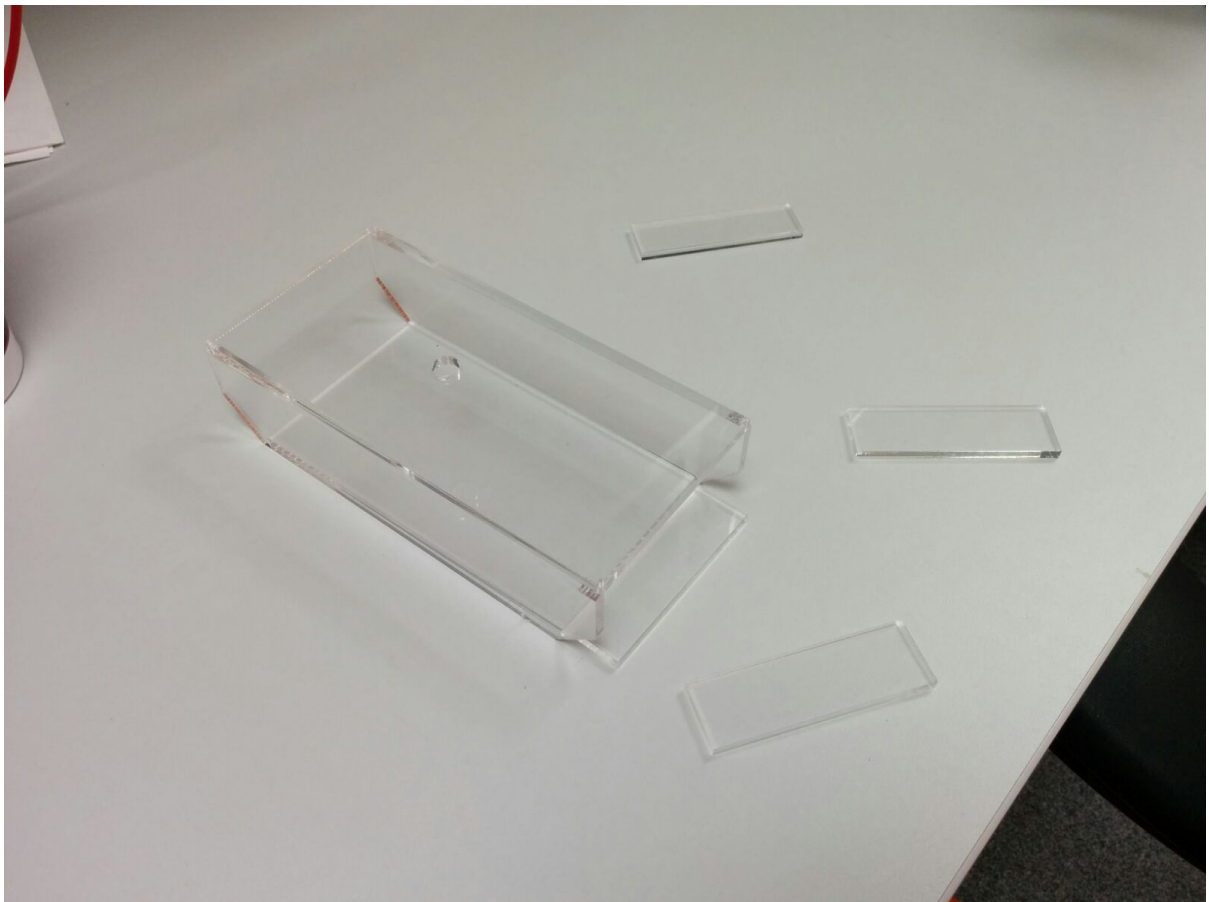


The Despair Strikes Back

A fully featured tank would have been too much. The deadline getting ever closer, we decided to simplify our design. First, we dropped the idea of tank tread, the little parts being too time-consuming to make and combine. Second, we abandoned the idea of the LED mounted in the gun. Instead of the tank treads, we decide to make tyres based on initial sketching seen below.



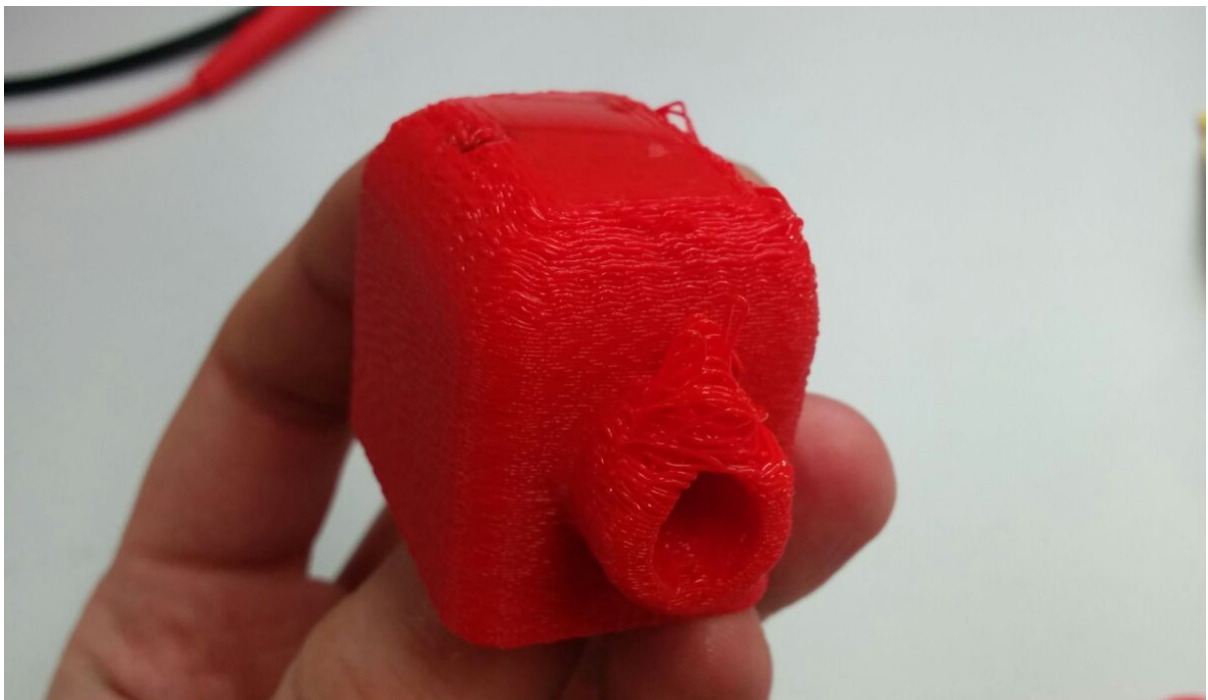
The work continued and everything seemed to go somewhat well. To handle the front and back panel problem we had earlier we decided to make the connecting panels' edges sloped with glue holding them together. Seen below are the first laser cut parts.



Everything was well until we 3D printed the first parts.



This is the bottom half of the gun tower. The servo should have been mounted on this, but alas, the servo didn't fit.



The top half of the gun tower. Problems with servo not being able to rotate with this.

The Return of the Success

In the end we made it. The parts are together and the code works. Final assembly seen below.

