

Robotics Class

This week I focused on making a wrench that is 7/16 of an inch on one side and 10mm on the other side. This wrench is for rigging spot rowing boats, I need both sizes of wrench because depending on the manufacturer and model of the boat they can use either 7/16in or 10mm.

I made a 3D model of the wrench in Fusion360, then projected it onto a 2D plane. After which I exported the 2D plane as a DXF, which I made into a PDF and imported into VCarve in order to make the tool paths and saved as it NC code.

After I finished making the tool paths, I turned on the Plasma cutter, and the ventilation system. I then homed the plasma cutter and cut the wrench, after which I waited for the metal to cool and took out the wrench. I then angle ground off the rough edges made by the plasma cutter and the rust on the sheet metal.

I attempted to mark the sides of the wrench using metal stamps. This did not work well, the text was barely legible and it did not look good cosmetically. Worse yet there was no paint on the metal so it was very susceptible to corrosion, because of these problems I decided to use the laser cutter to remove spray paint from the metal. Sadly I ran out of time during the week so I will have to continue next week.

Robotics Team

During the robotics team meeting, the software team discussed what sensors we could use to get the data required to have our Underwater ROV autonomously navigate. We decided to use a combination of stereoscopic vision, an accelerometer, and a pressure sensor. We decided against using LIDAR because blue light LIDAR is very expensive, and IR LIDAR does not work underwater.

We also decided that we want to use Tauri for our front-end, and use Python alongside OpenCV and other libraries for our backend with very simple rust code to link the two. We are using these technologies because common skills such as web development and python programming will carry over and make it easier for us to on-board new developers. Although python can be slow, most of the computational heavy lifting will be done by libraries written in C. So to use an analogy from our teacher's son, "If you are driving 100 miles are you going to walk or run to your car".

PDF Version

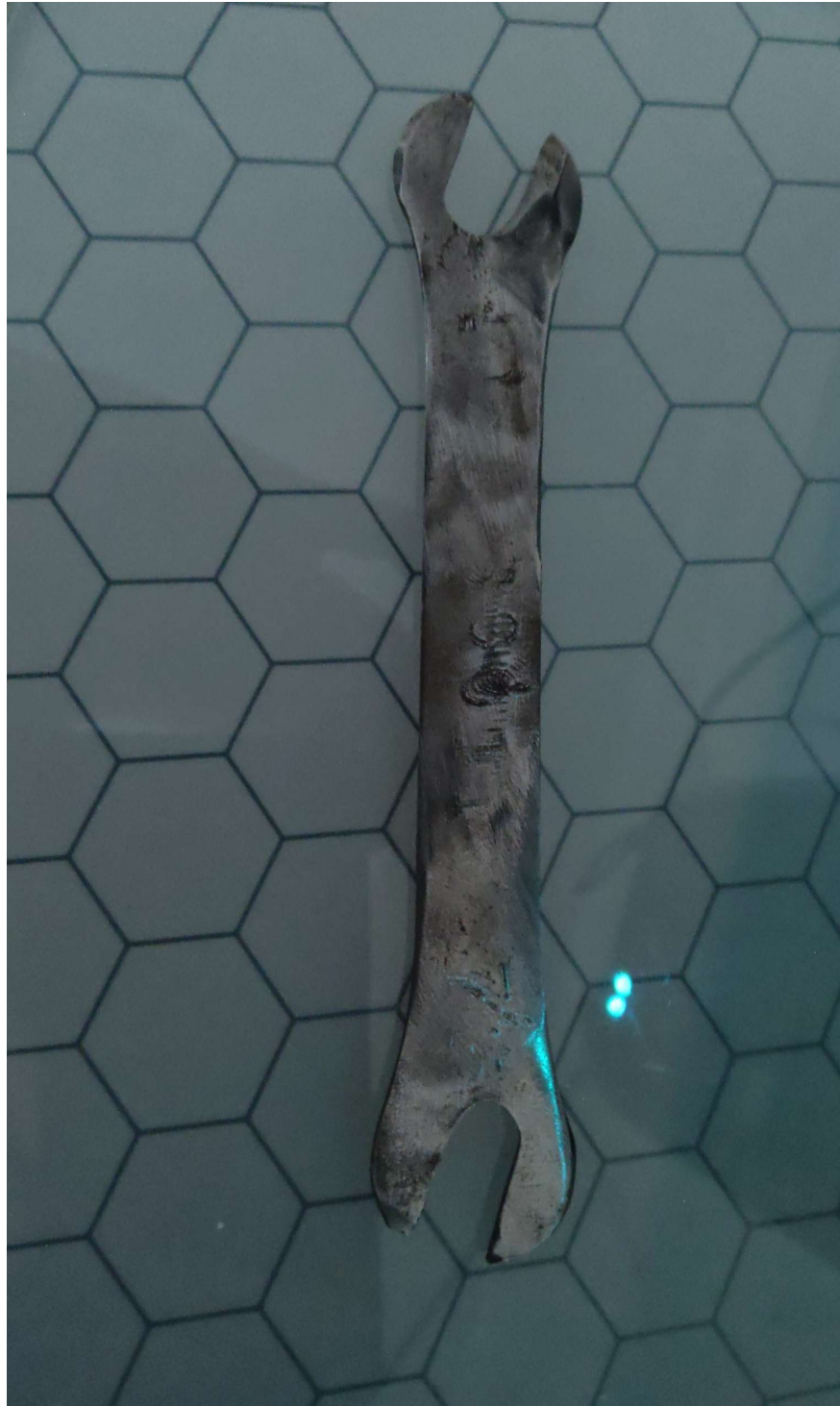


Figure 1: Image of first edition of wrench