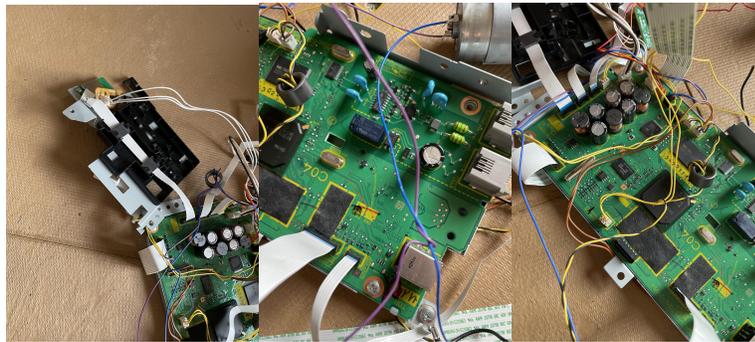


Reverse Engineering Challenge

I'd like to start off this essay by defining the word engineering, engineering is defined in the Oxford dictionary as the branch of science and technology concerned with the design, building, and use of engines, machines, and structures. Now I'd like to define the word reverse-engineering, reverse-engineering is the reproduction of another manufacturer's product following detailed examination of its construction or composition, that definition is also found in the Oxford dictionary. This challenge is about exploring the inner workings of an electronic device at a part-by-part level and our team would like to show you how we did just that.

First we thought of every possible electronic device that we could use for this challenge and finally came to the conclusion of using a printer. We came to this conclusion by looking at the multiple components and uses of a printer. We found that a printer is a peripheral device specifically designed to replicate contents seen on a computer system onto a physical material, typically a paper of some kind. We used the classic toner-based wireless printer.

Second we got the printer and started taking it apart while taking videos and pictures through out the process. After heavy research we took notice of the paper support, sheet feeder, printer cover, output tray, connectors, edge guides, control buttons, cartridge cover, and print head. We also saw many gears and motors within the printer. One team member quickly dismantled the cover of the printer, while another worked on taking apart the sheet feeder and output tray. During this time our other teammates took pictures and recorded our reverse engineering.



These three pictures are of the printer's motherboard.



These two are of a motor attached to the motherboard

Third we took apart the ink boxes and glass scanner. We also took a picture of some of the parts on a work bench as shown in the picture below.



Lastly I'd like to wrap up this essay with a brief summary of what we learned through out this challenge. We learned that there is so much more to a printer that just buttons and paper, we learned about the scanning system, the sheet feeder, and the ink cartridges. We also learned that many gears are imputed on the side of the printer to feed the paper in and out. We noticed that the distribution of the ink uses a type of rack and pinion mechanism and belt mechansim. Our team explored the inner workings of a printer at a part by part level.