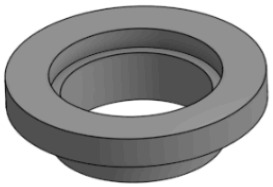
Drawing to 3D Model Machine-Learning Project

The Goal:

And AI model that can turn a (sloppy) hand sketch into an editable 3dmodel in the form of a .step file.



I drew this with a mouse, don't judge

What Needs to be Done:

- The first step to any project that has lots of automation is to do it manually, so we will manually make one like of our dataset first to break down the task

- For Avery: make an intro to this project video for those who didn't see the in person explanation.

- Download the data to be used to train from GrabCAD
    - Need to learn a little about the API (GrabCAD Software Development Kit) (APIs and SDKs: Integrating 3D Printing Into Your Manufacturing Software Ecosystem - GrabCAD Blog)

- Research different open source AI models and decide the best one for this project
    - Consider the open sorce-ness as something that influences which to choose (Open Source AI Deep Dive) (Copy of AI day notes Fem/NB in code)
    - Hugging Face (a place to find AI models)

- Learn about what tools we can use to customize our dataset for our task
    - OpenCV ← uses more traditional image processing tools
    - Free AI Drawing Generator - Fy! Studio ← result looks more like a drawing

- Use pandas to make a dataframe (pandas.DataFrame — pandas 2.2.2 documentation) for our dataset. pandas 2.2.2 documentation

- Train our model.
- Test our model

Skills we will learn for this project:

- READING DOCUMENTATION
- Git or GitHub
- Basic bash commands
- Python
- Documenting your process and communicating that to others
- Possibly tailscale so we can all access my server

Use your googling/ChatGPT(or other llm)/asking question skills to learn what you can about these skills if you do not have one already. Remember that we're in this together and are all beginners at different levels. There are no dumb questions. Also, sometimes the answer will be: google it. This is not to avoid answering, but to help you build your problem-solving skills. Always happy to help break down the answers to questions and help understand documentation and Wacky software terminology.

Questions Avery has yet to answer:

- Do we want the model to understand shading?
- How can we build the dataset such that the model can use drawings in many styles?
- Damn I need to get more sleep