

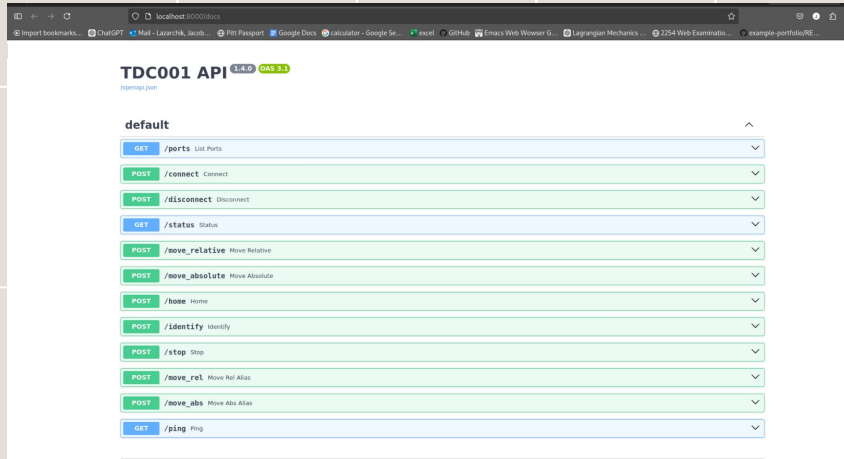


TDC001-Docker Update

By Jacob Lazarchik, Made for Jun 25th 2025

Backend Container

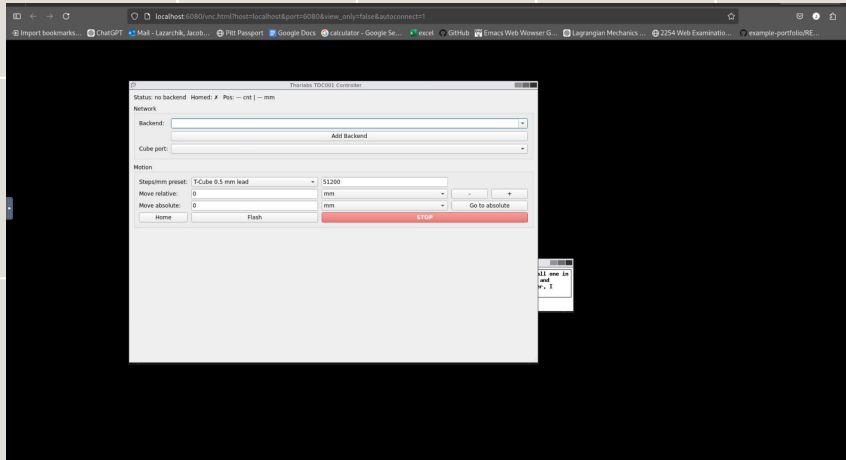
Fast API Backend (Fully in docker container)



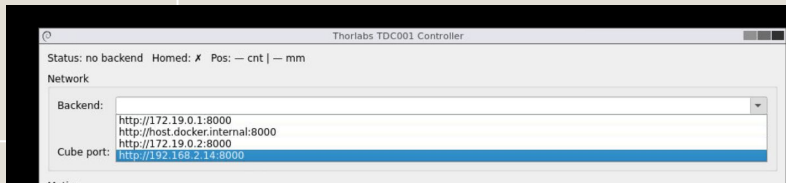
1. My original TDC001 python script (the controller) was converted to a “server” using FastAPI with only a few lines of code
2. This FastAPI server + original script was then put fully into a docker container, successfully running on Windows and Linux, and accessible from the entire laboratory
3. Can be easily interacted with using the automatically generated interactive documentation provided by FastAPI by going to [“http://yourip:8000/docs”](http://yourip:8000/docs)
4. This code can be reused thousands of times for every device in the lab and easily make containers for every hardware controller

Frontend Container

Pyqt6 Frontend (Fully in docker container)



Searches network automatically for backend



1. Did a PyQt tutorial, went through many iterations of the GUI to end up with this exact structure in normal python
2. Once it was able to communicate remotely to my running backend container, I put the whole GUI into a docker container
3. It acts as a remote desktop client into a virtual desktop running inside the Docker Container, you can access it via a browser
4. There are issues to fix (such as power restoring), but the UI and its existing features are fully functional
5. This repo, and its scripts/containers, can be repurposed for all future GUIs we create in the lab

Cross Platform Launching/Shutdown Scripts

Linux and Windows Scripts

- readme.txt
- frontend-shutdown.sh
- frontend-launch.sh
- backend-shutdown.sh
- backend-launch.sh

- backend-launch.cmd
- backend-launch.ps1
- frontend-launch.cmd
- frontend-launch.ps1

1. One-click launchers allow for building new images from scratch and starting containers
2. Fully Cross-platform for Windows, Linux, and soon MacOS
3. Automatically opens the respective websites for the backend or frontend containers (fastapi documentation or GUI container)
4. Shutdown scripts can be used to shut down and also delete containers
5. These scripts can be repurposed for all future GUIs/Controllers made in the lab, and this repo can be cloned over and over for any type of development

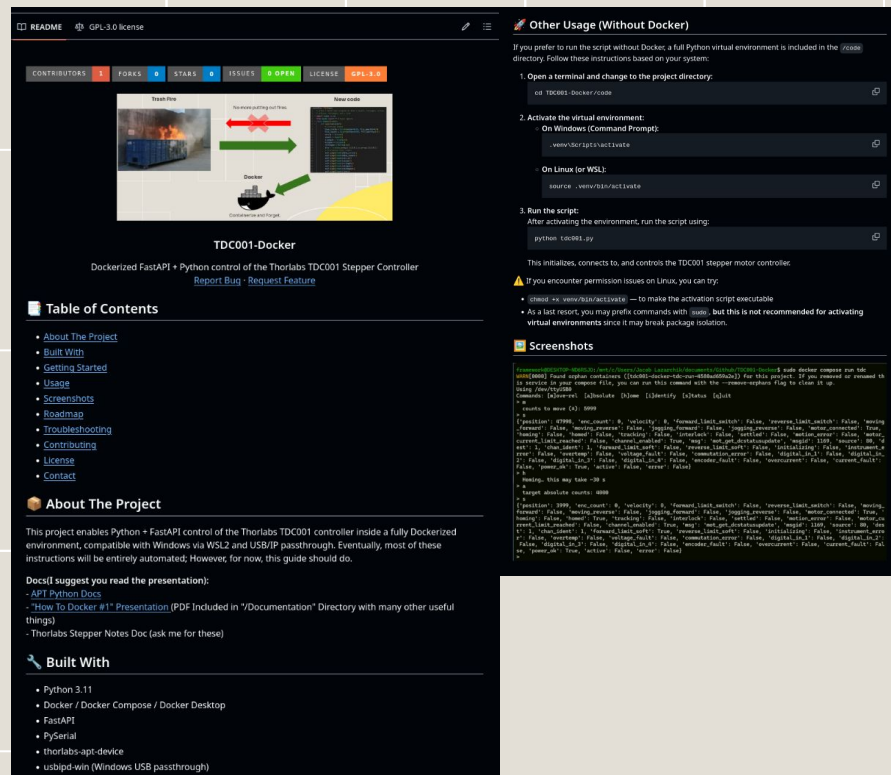
Easy to use y/n interface

```
Thorlabs TDC001 GUI launcher

[INFO] Compose file /home/framework/personal/github/TDC001
[INFO] Found existing image for tdc_frontend (614ed2c9161d)
Rebuild it? [y/N] n
[INFO] (re)creating container...
WARN[0000] Found orphan containers ([tdc_backend]) for this
move-orphans flag to clean it up.
[+] Running 0/1
Container tdc_frontend Recreate
```

Fancy Github Documentation

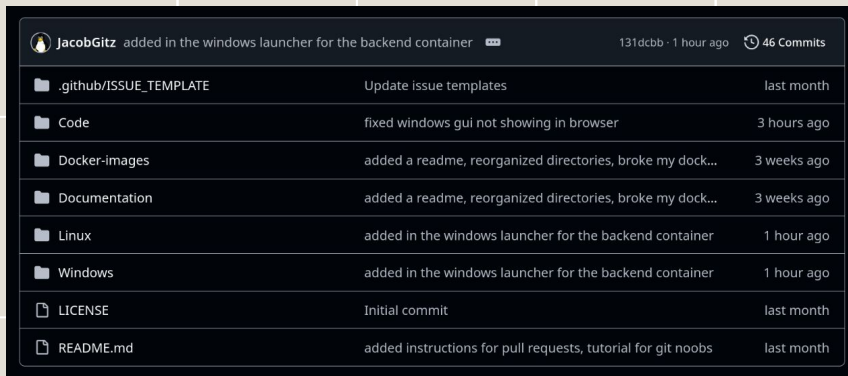
My Github Landing Page for this



1. Awesome Lists on github list amazing projects for many coding things, collections of hundreds of links for any project, super useful
2. I used an “awesome readme.md” list and found a good markup template for my repo
3. Chatgpt + a few minutes of editing allowed me to make this. It isn't updated for the stable release yet, but, it is current to the existing main branch docker container.
4. This can be used by anyone as a starter for their projects as well, if they clone this repo, it is just editing a bit to make this nice.

Organized+Documented Directories

My directory for the project



File/Folder	Commit Message	Time
.github/ISSUE_TEMPLATE	Update issue templates	last month
Code	fixed windows gui not showing in browser	3 hours ago
Docker-images	added a readme, reorganized directories, broke my dock...	3 weeks ago
Documentation	added a readme, reorganized directories, broke my dock...	3 weeks ago
Linux	added in the windows launcher for the backend container	1 hour ago
Windows	added in the windows launcher for the backend container	1 hour ago
LICENSE	Initial commit	last month
README.md	added instructions for pull requests, tutorial for git noobs	last month

1. Many organized folders – folders inside of folders – each with a readme.txt explaining all directories and files
2. Meant to make this whole project as easy to navigate in the future and repurpose for future projects.
3. Some work needed on my readme files and comments in code, but this will refine as time goes on.
4. Beginner oriented comments so that even if you are a python beginner, you can roughly understand how to go from zero to pro.

Remaining Roadmap

Image Zipping

- Make scripts to zip and package docker images for easily sharing across people
- This will contribute to rapid development

Image Loading

- Scripts that allow you to take a docker image from someone else and load it up
- paste zip file into directory and script recognizes it, simple click and docker engine can use it

Readme

- Fix all readme files, write some comments, and redo the main github readme for the newest release

Full release

- After everything seems good, I will put it on my main branch for all people to test and give me notes

Camera

- repurpose these containers for repackaging kai's code and all others in the future

Goals

- This repo can be cloned infinitely for all projects
- Many scripts will exist for python virtual environments, wheelhouse, building, sending, and receiving docker containers