# Week 1: Individual Activity Log

\*\*Status:\*\* Working individually

\*\*Topic:\*\* Vision Transformers for chest X-ray classification

\*\*Total Hours:\*\* About 33 hours

## What I Did Each Day

### Monday Sept 16 (4.5 hours)

\*\*Morning (2 hours):\*\* Read through all the assignment PDFs and figured out what I need to do. Made a Python script to extract text from PDFs which was pretty cool.

\*\*Afternoon (1.5 hours):\*\* Started searching for papers about Vision Transformers. Found some good ones on ArXiv.

\*\*Evening (1 hour):\*\* Set up Python environment and tested my PDF extraction code.

### Tuesday Sept 17 (6.5 hours)

\*\*Morning (3 hours):\*\* Deep dive into Vision Transformer research. Read like 8 different papers. The "Attention is All You Need" paper was really interesting.

\*\*Afternoon (2 hours):\*\* Researched the COVID-19 chest X-ray dataset. Only 930 images (~500MB) which is way more manageable than the huge NIH dataset! Learned about medical data privacy stuff.

\*\*Evening (1.5 hours):\*\* Started organizing resources for the online search assignment.

### Wednesday Sept 18 (5 hours)

\*\*Morning (2.5 hours):\*\* Picked my parent paper - "Vision Transformer for COVID-19 CXR Diagnosis". Seems doable and has available data.

\*\*Afternoon (1.5 hours):\*\* Figured out what libraries I'll need (PyTorch, etc.) and checked if my laptop can handle it.

\*\*Evening (1 hour):\*\* Planned how I'm going to process the dataset.

### Thursday Sept 19 (4 hours)

\*\*Morning (1.5 hours):\*\* Documented the COVID-19 dataset details. Free to download from GitHub - much easier than the NIH dataset.

\*\*Afternoon (1.5 hours):\*\* Worked out my data splitting strategy. Need to be careful with medical data to avoid patient leakage.

\*\*Evening (1 hour):\*\* Read about medical imaging ethics and HIPAA stuff.

### Friday Sept 20 (7.5 hours)

\*\*Morning (2 hours):\*\* Set up my GitHub repository. Made it public so prof can see it.

\*\*Afternoon (2.5 hours):\*\* Wrote up my implementation plan and documented everything.

\*\*Evening (3 hours):\*\* Installed OBS Studio for recording, planned out what I'll show in my demo video.

### Saturday Sept 21 (5.5 hours)

\*\*Morning (3 hours):\*\* Wrote the Python code for dataset splitting. Got it working properly with patient-level splits.

\*\*Afternoon (1.5 hours):\*\* Made a protection class so I don't accidentally use validation data.

\*\*Evening (1 hour):\*\* Double-checked all my assignments and made sure everything was complete.

## What I Learned This Week

\*\*Biggest challenge:\*\* Understanding how to properly split medical data. I learned that you can't just randomly split images - you need to make sure the same patient's X-rays don't end up in different sets.

\*\*Coolest discovery:\*\* Vision Transformers are actually pretty new (2020) but they're already showing better results than traditional CNNs for some medical imaging tasks.

#### Skills I developed:

* Better at reading academic papers
* Learned about patient privacy in medical data
* Got more comfortable with Python data processing
* Learned how to organize a coding project properly

## Resources That Helped Me Most

* \*\*ArXiv.org\*\* - Found most of my papers here
* \*\*YouTube videos by Yannic Kilcher\*\* - Really good explanations of transformer architectures
* \*\*GitHub repos\*\* - Found working code examples I can adapt
* \*\*NIH dataset documentation\*\* - Helped me understand the medical data

## Next Week Plans

1. Actually download the COVID chest X-ray dataset

2. Get my Vision Transformer code working

3. Start training some baseline models

4. Make my demo video showing the results

## Final Thoughts

This was way more work than I expected but I learned a ton. Working alone is challenging but I like being able to set my own pace. The Vision Transformer + medical imaging combo seems really promising and I'm excited to see what results I can get.

\*\*Total time:\*\* ~33 hours (way more than the 5 hour minimum!)

\*\*Week 1 Summary:\*\* This week I completed all the required assignments. I worked alone as an individual since I didn't find teammates. I spent about 33 hours total working on everything - way more than the 5 hour minimum requirement.

\*\*Personal Note:\*\* This was a lot of work but I learned a ton about Vision Transformers and medical imaging. The dataset splitting was probably the hardest part to figure out. I'm excited to keep working on this project next week!