Guide to running the imaging lab

**Day to Day Stuff**

1) Questions. So many questions. Be prepared for a lot, and for people to not have notes on what they did before.

2) Oxygen and Iso – O2 gets used very quickly. I’ve been ordering 10 tanks every couple weeks. Keep a close eye, as it’ll disappear in a day once in a while. Iso lasts longer but some jerks leave empty bottles in the flammables cabinet.

3) iLabs has been a pain. Slow as hell, people have trouble creating accounts and assigning account numbers, and it will forget which equipment people have been whitelisted for not infrequently. Good luck.

**Computer Usernames and Passwords**

UCT-GPU-PC: UCT-GPU-PC\ microct-gpu, mousebone4!

PathVision40158: PathVision40158\200021882, mousebone4!

UCT-LARGE-DATA: UCT-LARGE-DATA\uCT-Large-Data-Set , mousebone4!

DESKTOP-F5DDAI5: DESKTOP-F5DDAI5\User, Mousebone4!

All uCT computers: microct, mousebone4 (regular user), system, marwees1 (admin)

GitHub: brodtm@wustl.edu, Mousbone4!

Mathworks (for MATLAB) – brodtm@wustl.edu, Mousebone4!

**Scanner Maintenance**

1) Quality check for uCT systems

This hasn’t changed since I got here in terms of doing the scans. At some point, somehow, the contours got overwritten, so I’ve been simply copy and pasting contours from the previous QC scan to avoid pestering Scanco and then running the QC analysis task. If you want to ask them to reset it, of course, feel free.

I’ve been checking the results with the CalibrationVerification software on GitHub, but uct\_list can also function appropriately.

2) X-ray calibration

The Faxitron must be calibrated if for any reason the detector has been moved, or if it hasn’t been calibrated in 24 hours. For DXA, the detector must be placed in drawer 2 with nothing between the detector and the source to calibrate. For X-ray, it must be on the bottom with nothing in between. If the tray is moved from 2 to the bottom or from the bottom to 2, it must be calibrated. X-ray images will have line bands across them in a grid pattern if it isn’t calibrated, and DXA will give junk data.

**Data Management**

1) uCT Data

Data must be removed from the uCT 40 roughly weekly, and from the VivaCT less frequently. Green tapes are used in the uCT40, yellow in the Viva. Green tapes hold about 800GB each, yellow 400GB. Remember that RSQ files must be present on the system to generate billing information, so be sure to run the billing information scripts (below) before removing scans.

Note that running a move operation on to tape will slow the uCT40 scanner down considerably; I’ve taken to blocking off many weekends to clean data off.

2) Excess images generated for uCT

As people generate TIF images and DICOM stacks, data can start to accumulate quickly on the uCT systems. A MATLAB script under https://github.com/WashUMRC/GeneralFileManagement can be run to automatically delete all TIF images and stray DICOM images on both systems at once. Be aware that it will indeed get all of them, so make sure to run it during a down time and not while Evan is making fracture callus pictures.

3) Generating DICOM Images

DICOM stacks are of course useful and necessary for doing many of the data analysis methods we’ve come to use in the Core. There are two ways to generate DICOM images: Using Scanco’s software, and with a batch script through MATLAB.

MATLAB:<https://github.com/WashUMRC/DICOMManagement> is the location of the useful scripts. Running ctBatchDICOMFromISQ.m will generate full DICOM stacks for measurements within a range of values in a single sample number. So, if you need to generate DICOM files for all of sample 340, you can tell it to start at 00000 and end at 99999 to do all available measurements. You can of course be more specific, like 25647 to 29654 if you like. This method is preferred as it does not clog up the analysis que on the Scanco computers.

Scanco: There is a task called Convert to DICOM on each of the scanning computers. This will start a task that generates DICOM images for the volume you define, and run as an analysis the same way a cortical analysis runs. This is not the preferred way as it clogs up the analysis que and can get difficult to manage if you try to separate out multiple bones on a single measurement.

After either method: Run getDICOMFromMicro or getDICOMFromViva as appropriate and follow the prompts to gather your DICOM files. This removes the DICOM files from the Scanco disk tower and puts them where you tell MATLAB to deposit them, maintaining the measurement number structure. Note that generating and then retrieving these images will slow down the uCT40 considerably, and the VivaCT40 slightly, so try not to do this while people are scanning.

4) X-ray cabinet data

X-ray data are currently collected to the computer’s local drive, and the two primary folders of data (DEXA and Bioptics) are automatically mirrored to the Ortho server every night by running DXASync and Visionsync batch files as scheduled windows processes. The batch files are located here: <https://github.com/WashUMRC/ImagingLogging> This requires that the J: drive be mapped with current credentials and the wireless connection be connected to WUSM-Secure. Alternately, a wired ethernet port may also be activated and used.

5) General computing

Everyone has been taught to expect that any data outside of the basic scan data on the Faxitron and Scanco computers won’t be there when they walk away. There is local storage space for working on the GPU and Large Data Set workstations, but they may be randomly cleaned off to make space when needed. If people aren’t copying data to their own storage space before they stand up and walk away, they’re gonna have a bad time.