Research Documentation

1. **figure out how to standardize images and prep them (then document it)**

Process-> sharpen

Image->Type-> 8-bit color

web site to use it!!!!!!

we should probably have a user input to show colors

check outside inside and so on

GPT suggestion:

A screenshot of a document

Description automatically generated

1. **check accuracy**
2. **research writing a script for this**

GPT suggestion:

import imagej

import numpy as np

import os

# Initialize ImageJ

ij = imagej.init('path/to/Fiji.app')

def process\_and\_count(image\_path, lut\_name, tile\_size=(1024, 1024)):

# Load the large image

large\_image = ij.io().open(image\_path)

large\_image\_np = ij.py.from\_java(large\_image)

# Determine number of tiles

ny, nx = large\_image\_np.shape[:2]

nx\_tiles = int(np.ceil(nx / tile\_size[0]))

ny\_tiles = int(np.ceil(ny / tile\_size[1]))

total\_count = 0

counts\_per\_tile = []

# Process each tile

for i in range(nx\_tiles):

for j in range(ny\_tiles):

# Extract tile

x\_start, x\_end = i \* tile\_size[0], min((i + 1) \* tile\_size[0], nx)

y\_start, y\_end = j \* tile\_size[1], min((j + 1) \* tile\_size[1], ny)

tile = large\_image\_np[y\_start:y\_end, x\_start:x\_end]

# Convert tile to 8-bit and apply LUT

tile\_8bit = ij.py.to\_java(np.uint8(tile))

ij.py.run\_macro("""setMinAndMax(0, 255);""")

ij.py.run\_macro(f"""run("Apply LUT...", "lut={lut\_name}");""")

# Cell counting on the tile

# This will be specific to your analysis; adjust accordingly

# count = ...

# Update counts

counts\_per\_tile.append(count)

total\_count += count

return counts\_per\_tile, total\_count

# Example usage

tile\_counts, grand\_total = process\_and\_count('path/to/your/large/image.tif', 'your\_lut\_name')

print("Cell counts per tile:", tile\_counts)

print("Total cell count:", grand\_total)

Key Points:

* Image Tiling: The script subdivides the image into smaller tiles based on the specified tile\_size. Adjust this size according to your system's capabilities.
* 8-bit Conversion and LUT Application: This script assumes the image can be directly converted to 8-bit. The LUT application step may need to be adjusted depending on how you want to apply the LUT.
* Cell Counting: The actual method for counting cells will depend on your images. You might use built-in Fiji commands or custom algorithms.
* Memory Management: Large images can consume a lot of memory. Ensure that your system has enough resources to handle the image sizes you're working with.

Resources used:

ChatGpt

<https://py.imagej.net/en/latest/06-Working-with-Images.html>