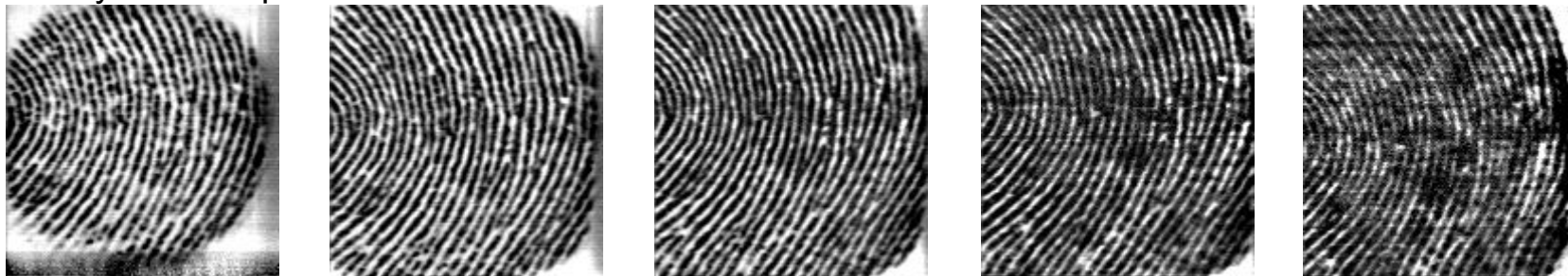


# Detecting finger pressure

# Samples

Pressure →

Dylan's sample:

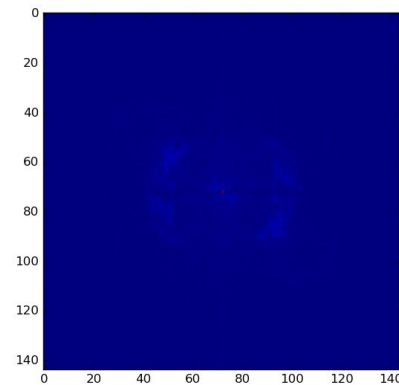
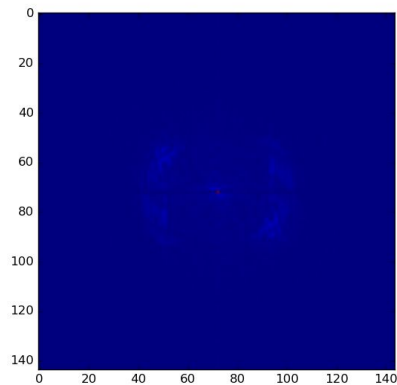
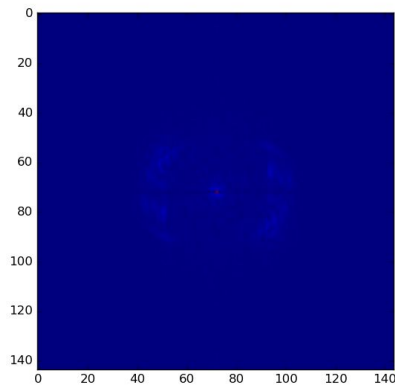
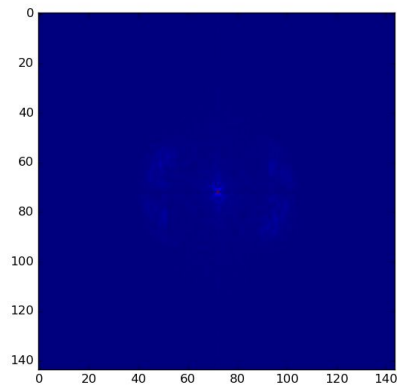


Ryan's sample: (different orientation)



# FFTs of finger images

Pressure



Hard to see what's going on in the frequency space

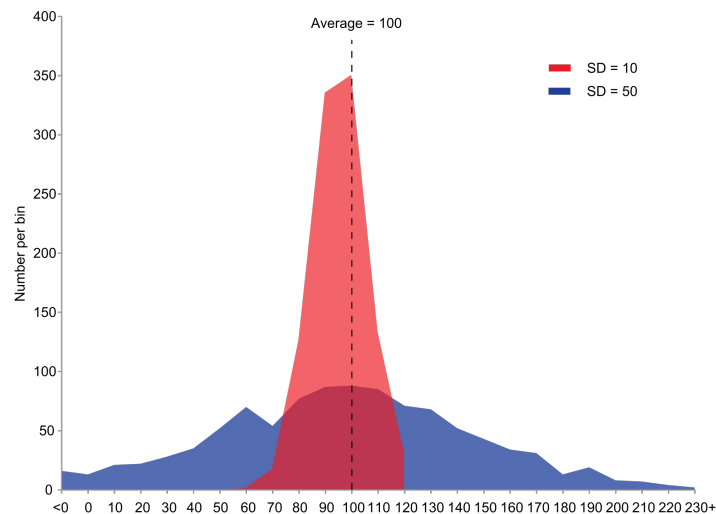


# Standard Deviation of FFT

Lower standard deviation is less spread

Less spread is lower frequencies

***Images with lower STDs have  
lower frequencies on average***



# Standard Deviation Results

Pressure



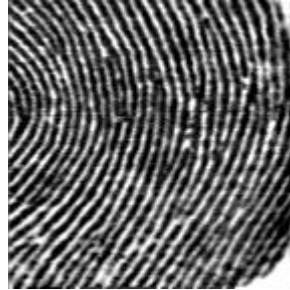
20732.59



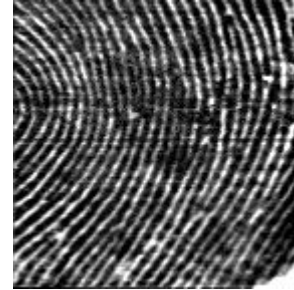
18927.99



16798.04



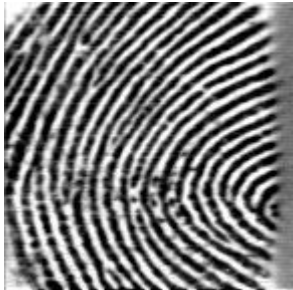
14551.83



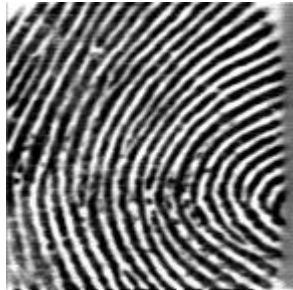
13880.11



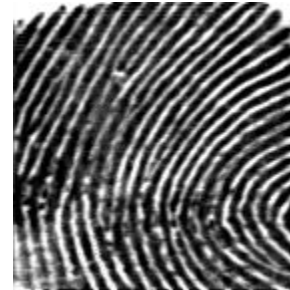
20225.78



19225.42



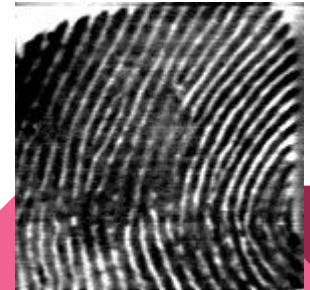
16610.41



15472.86



15177.70

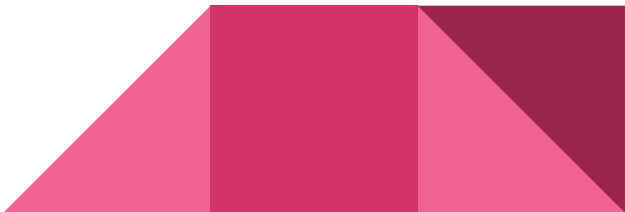


# Analysis

- Harder presses average lower frequencies
- Results are consistent regardless of orientation
- Results are consistent regardless of user



## Time complexity

- FFT is  $O(N \cdot \log(N))$
  - STD is  $O(N)$
  - Whole algorithm  $O(N \cdot \log(N))$
  - Images with  $\sim 10^4$  pixels have  $\sim 10^4$  computations
- 

# Applications

- Thickness of paint brush tool
- Video games
- Criminal investigations
- Winning hackathons?





# Code

<https://github.com/dxa4481/FingerprintPressure>

GPL licensed



# Questions?

