Identification Systems

Exercises 6

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1. Implement an algorithm for binary image skeletonization, that filters out short lines and fills short gaps.
2. Use Biolab database to test the previous algorithm on fingerprints.
3. Implement an algorithm that allows singular point identification. Verify its performance on Biolab database.
4. Given the fingerprint images for Alice, Bob, Cecile and Eve, find:
   - Core for all the fingerprints,
   - An opposite bifurcation, a spur, a bridge and a dot for Alice,
   - A lake, a dot, a bifurcation and an opposite bifurcation for Bob,
   - A bifurcation, a double bifurcation and a scar for Cecile,
   - An opposite bifurcation, a lake, a delta, and a loop for Eve.
5. Using the previous fingerprints and a sample match the sample to one of the users.
6. Using the denoising methods learned before, as well as difference of Gaussians and spectral transforms reduce the noise on the deteriorated Bob's sample in order to allow a proper identification.