

Bachelor Thesis topic (Computational Neuroscience/Software tool development)

Developing a User Interface for an image processing pipeline that generates images with objects hidden like in star constellations.

To generate images that hide the object in an image in form of a star constellation, we have developed an image processing pipeline at the CNS group. This dataset currently generated is being used to study the computational notion of concepts and the process of image understanding in humans. The input and the intermediate stage images look like Figure 1. Few manual steps are still required in this process to select a particular setting or clean the outline version of the image with black colour spread tool in image editing software. The objective of this thesis is to create a software tool that allows the user to make these choices in a single UI. The software tool will be published along with the release of the dataset, hence a chance for you to make a scientific contribution.

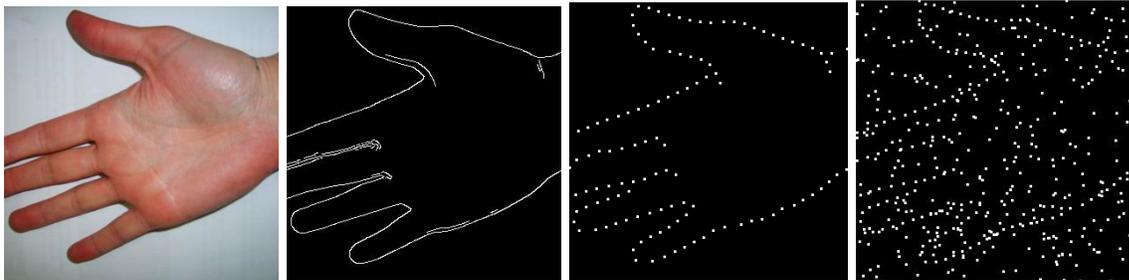


Figure 1. Generation pipeline for constellation images from a) original b) outline c) dotted d) constellation (final) version.

The work will entail creating the software tool that interacts with the image and the pipeline during the image generation process. The tool should consist of the interface to make adjustments to the image at the various stage and shows a preview of the image when a particular setting is used. An interface to edit the image with an eraser or pencil tool at the stage of outline.

Clarification: Most of the pipeline is ready along with a version of the dataset. So most work is to develop the UI tool and refactor and align the code for that purpose. But we welcome any suggestions/changes to improve the generation pipeline as well.

Please feel free to contact me: tarunkhajuria42@gmail.com for any further details.