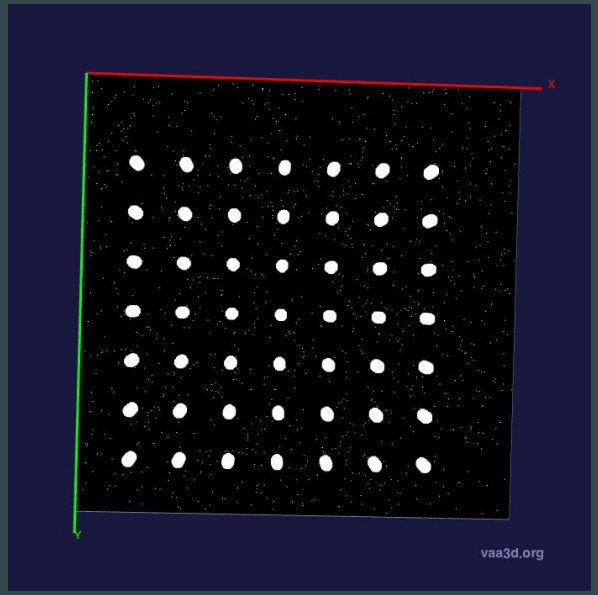
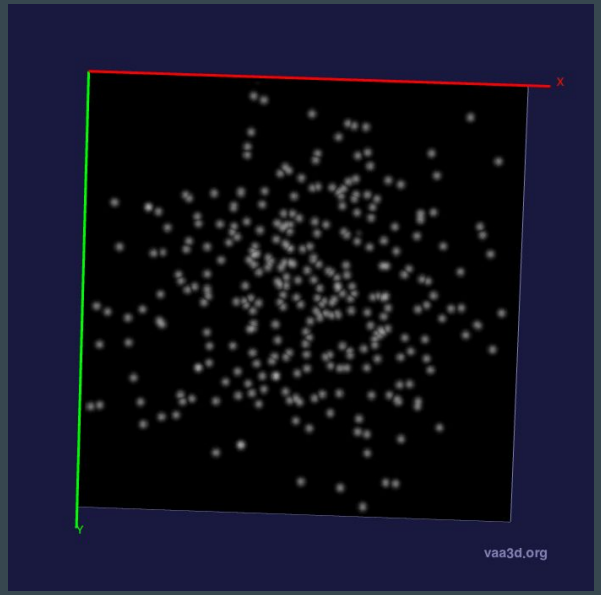
Simulated data generator

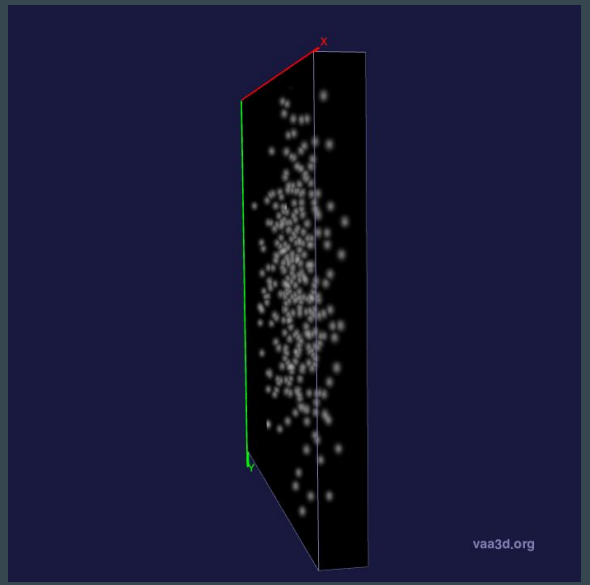
Built a tool that generates artificial cell counting datasets to use with our algorithms for validation and evaluation. Using this tool we created 8 datasets to be used as benchmarks. Capabilities of the tool are shown below:



Standard cell array with salt/pepper noise



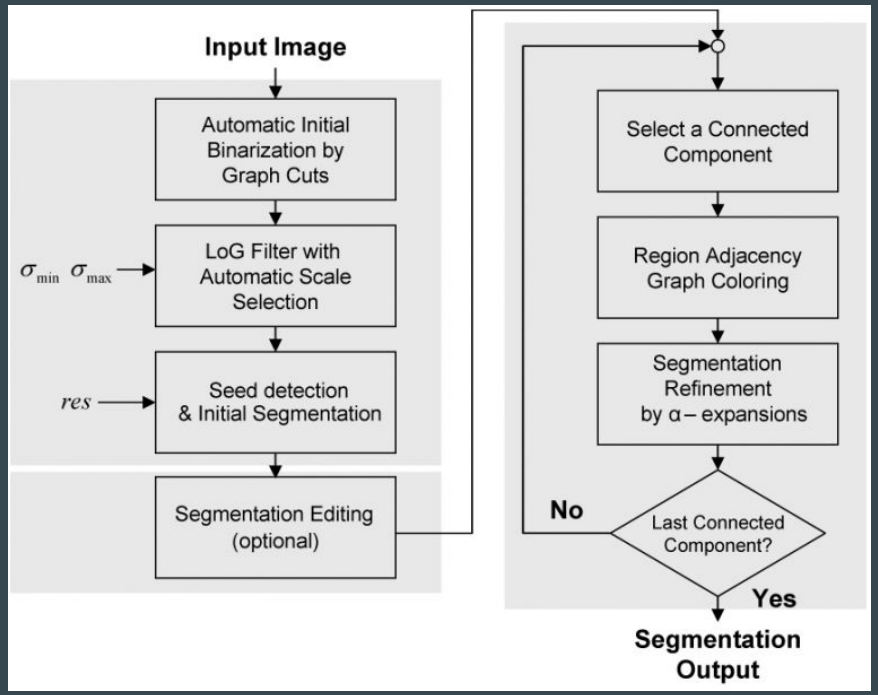
Randomly Normally distributed blurred cells



Z-axis view of the randomly distributed cells

Unsupervised algorithm for cell detection

- Yousef Al-Kofahi et al is a survey of the automated cell-counting algorithms suggest that FARSIGHT's nuclei segmentation algorithm performed the best out of the modern existing algorithms. But still not good enough to replace supervised methods.
- The algorithm is detailed on the FARSIGHT website and in the paper although the paper only details the 2D variant.
- The algorithm exists in FARSIGHT toolkit. The algorithm in the paper is written in C++. We'll try to at least get it running in C++ or FARSIGHT and then port it to python if it's not too bad.



Flowchart of algorithm for 2D histology images