Local-threshold 2D-tophat Cell Segmentation Algorithm

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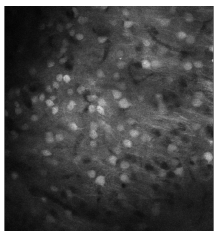
Research background

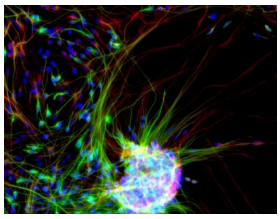
Processing about Images taken by Two-photon Confocal Microscopy(TCM):

1.Task: Cell segmentation for biological experiment image of two types, Two-photon Confocal Microscopy (TCPM) and Fluorescence Protein Microscopy (FPM).

2.Target: Accuracy, Speed and Universality



&



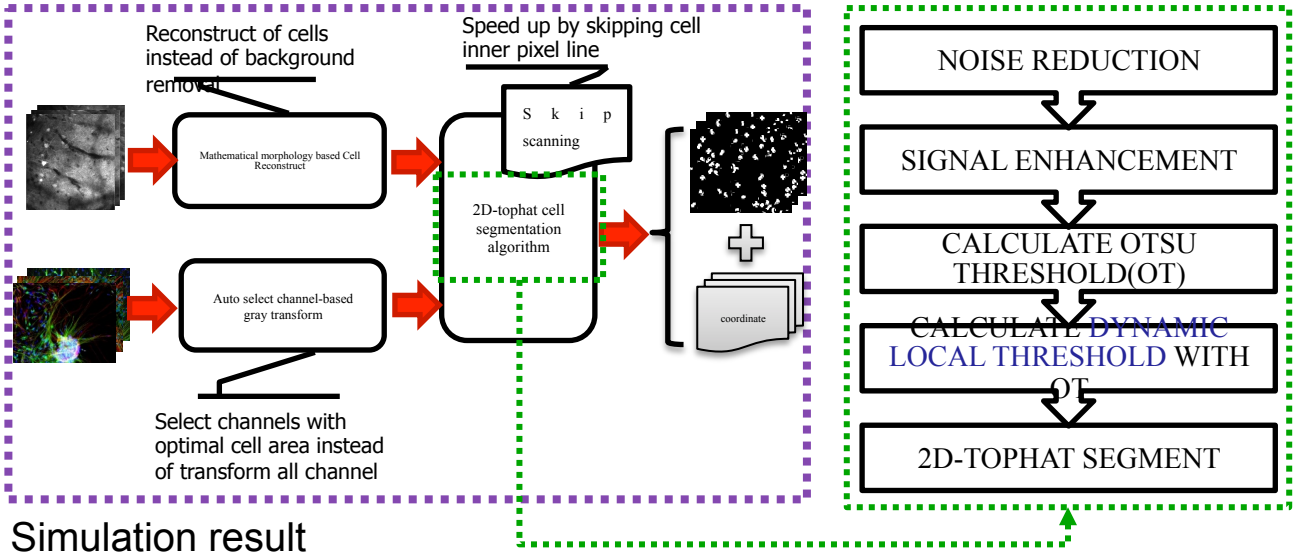
Problem statement

Gray scale image:
a. Unstable for complex background
b. Missing if gray value varies a lot

Color image:
a. Unstable for complex background
b. Unstable if cell isn't near round
c. Slow due to high resolution

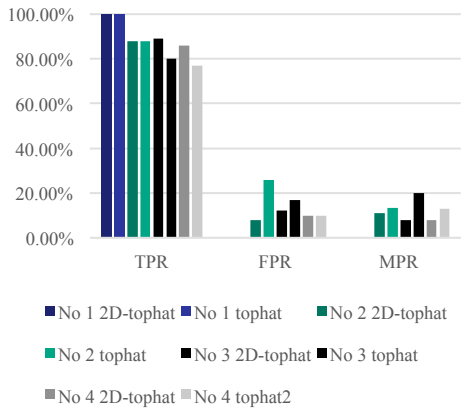
Proposed method

Overview:

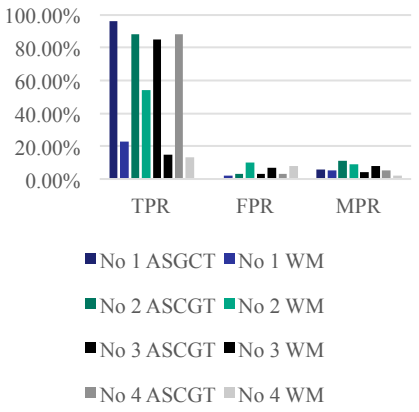


Simulation result

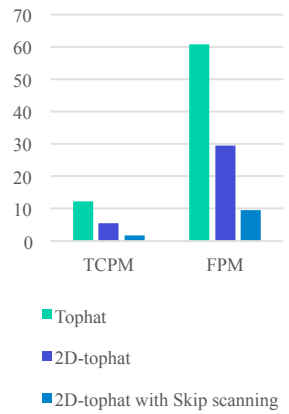
TPCM simulation result in rate



FPM simulation result in rate



Time saving result



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