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| Title of the master’s thesis: | Design and evaluation of a Deep Learning approach to quantify synthetic volumetric autofluorescence data of immune cell infiltrate |
| Abstract: | Biology is a quantitative discipline, it requires a lot of evidence to support a hypothesis. Images of cells and tissues are an excellent source of data, but to get meaningful insights, they must be processed, analyzed, and quantified.  Deep Neural Networks are one of the techniques used in the data analysis process. These networks may perform remarkablyin tasks like picture segmentation and classification, but they need a lot of training data to do so. When images are three-dimensional, labeling training data becomes considerably more difficult. To address this issue a synthetic data simulator is necessary to solve this problem. It can create unlimited annotated data for Neural Network, to test its performance.  This thesis develops a simulation framework, compare its results to actual stacks, acquired with multiphoton microscope, and train a deep convolutional network using this artificial data to count and categorize immune cells. |

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