# Meeting Note

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Project: E. coli bacteria image segmentation

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**Finished Items**

* Reading of the paper ‘A Survey on Image Segmentation and Feature Extraction Methods for Acute Myelogenous Leukemia Detection in Blood Microscopic Images’ in IJCSIT.
* Read the code in the ‘kolian1/texture-segmentation-LBP-vs-GLCM’ project (<https://www.mathworks.com/matlabcentral/fileexchange/52753-kolian1-texture-segmentation-lbp-vs-glcm>)
* Manually make a mask out of the sample image and apply it to run some tests using the project given above. The result is not very good.

**Discussion Summary**

* Professor Chen suggested that we could select a small portion of the sample image that is relatively easy to segment instead of using the original sample image at the beginning. Then move on to other portions of the image that are harder to segment and step by step integrate these portions to segment the whole image if the segmentation result is good.
* We may try different preprocessing techniques in image processing to improve the segmentation result.
* We can apply the feature extraction methods mentioned in the previously read paper and test them one by one, record the result and compare. The feature extraction method used in deep learning can also be considered. We also need to tune the parameters of these feature extraction methods.
* Given that one feature extraction method may not be good enough, we need to figure out how to combine these feature extraction methods to get the best result (Probably by assign weights to each feature vector and combine them into a single vector).
* To improve the performance, we may need to do the feature space reduction like PCA.
* Different classification algorithms can be used to do the image segmentation. One simple example is k-means.

**Challenges**

* Understand different feature extraction methods and may need to try a lot of different methods to find those that have relatively good result.
* Tune the parameters of those methods.
* How to combine those features to get good result.
* Find different classification methods, understand them and apply them one by one.

**Schedule**

We plan to do the project and work with these challenges on this weekend and we arranged a meeting on next Monday so that we can talk about the progress and problems that we have.