

## ABSTRACT

*Tuberculosis is an infectious disease caused by the bacteria Mycobacterium tuberculosis. Therefore, early diagnosis of tuberculosis by performing a sputum test is very important to prevent transmission to others. Microscopic examination of tuberculosis sputum samples requires 100-300 points of field of view. This requires a lot of time, so we need a system that can combine 100-300 field-of-view point images into a single unit or in Whole Slide Imaging (WSI).*

*So, in this final project, a system has been designed to combine microscopic images of sputum samples called stitching images. Autostitching is a stitching method of sputum samples by automatically combining overlapping fields of view using the SIFT (Scale Invariant Feature Transform) and SURF (Speeded Up Robust Feature) methods to find local features in the image. The BF (Brute Force) matcher and KNN (K Nearest Neighbors) algorithms are used to find matching features in the image.*

*The result of this study was to sew an image on a microscopic image of a sample of sputum tuberculosis. From the results of stitching with the SIFT and SURF methods after the ratio test, the highest accuracy value was obtained in stitching using the SURF method, which was 100% with an average process time of 16.58 seconds while stitching using SIFT obtained an accuracy of 92% with an average process time of 13 seconds. At the calculation of zero-pixels, the minimum value of zero-pixels is at least obtained in stitching with the SURF method with a minimum value obtained of 964,247. While the zero-pixels obtained in the stitching results with SIFT the minimum value obtained is 1,069,687.*

**Keywords:** *Autostitching, Tuberculosis, SIFT, SURF*