

## **ABSTRACT**

Polycystic Ovary (PCO) describes as ovaries that contain many small cysts/follicle in female reproduction organ. The detection of the ovary based on the ultrasound image. Currently the identifying of the follicle is done manually by doctor vision.

In this research, we proposed automatic follicle segmentation on ovary ultrasound image. The identification of segmentation area on ovary ultrasound image can be used in analyzing for Polycystic Ovary Syndrome (PCOS), a hormonal disorder among female reproductive system.

The process of automatic segmentation is presented by automatically placed a seed. The seed initialization is selected based on specific criteria is limited by the boundary of edge detected region. However, we are proposing to use region growing to reprocesses the segmentation. We use the seed to present region growing algorithm. The process of the seed-growing schema is presented until there is no seed can be placed. And the expected result of this process is identifying the segmented region that will be calculated for the properties of the follicle.

For comparison, in this research watershed and edge detection algorithms are applied. As result, the accuracy of segmentation in this research is 64.50%, 87.37 %, 91.80 % and 91.82 for the watershed, edge detection, region growing 4-neighbor and region growing 8-neighbour respectively. In this research we also provide the Liu's Factor for some segmentation. As result, the average Liu's Factor in this research is 2768.88, 348.66, 186.20 and 183.50 for the watershed, edge detection, region growing 4-neighbor and region growing 8-neighbour respectively. Based on the accuracy the region growing has high accuracy than other segmentation technique and it is the most efficient segmentation since the Liu's factor is low.

**Keywords:** Polycystic Ovary, Ultrasound Image, Segmentation, Automatic Seed Initialization, Region Growing