Cervix detection using squared error subtraction

Abstract

In order to reduce uncomfortable cervix screening either using Pap smear or transvaginal ultrasound scanning, an autonomous transabdominal ultrasound scanning is proposed. This requires an exact probe position and angulation to capture the cervix image. In this paper, we present a new method to detect cervix in the best position and angulation. More than 100 samples were processed and analyzed. Image enhancement of the ultrasound image data was performed before further processing and cervix detection. The best cervix ultrasound image was used as a reference template for analysis. The correlation between template and target image was compared using squared error subtraction of histograms. Test results show that taking a different rate threshold at 0.075, an accuracy of 100% for cervix identification is achieved. This method is very efficient since it uses a simple algorithm and requires low memory capacity. This technique will be powerful to be used for real time autonomous scanning of cervix for surgical monitoring or acceptable operator-independent cervix screening.