CHAPTER 9

FUTURE RESEARCH DIRECTIONS

There are many paths leading into future. The methods proposed in this thesis can most certainly be improved. The theory supporting the proposed adaptivity can be extended with other aspects.

The wavelet-based image denoising methods used one particular wavelet in transformation of the original, and that wavelet is chosen experimentally. However, given different input image, different wavelet function may prove to provide better results. Thus, it would be beneficial to analyze the statistics of the input image prior to denoising in order to select the wavelet which will get almost same true image. Also, in multiresolution analysis, the same wavelet need not used in each level of decomposition. Such image analysis and wavelet selection could provide an optimal solution to reduce noise for all type of imaging systems.

The algorithms are design to remove AWGN from images and have shown to give higher PSNR than other methods given in literature. However, AWGN is only one of many types of noise source that is found in the images. There are other types of noises that also present in images such as correlated noise, frequency dependent noise, thermal noise etc. so the algorithms may be developed that tailored to remove different types noises in images.

The proposed method is based on locally adaptive statistic. The features are detected by neighboring pixels variance in rectangular window. We could use different shape window which should be capable to detect features in any location, orientation, and scale.

Most of the SAR image applications are still in research phase, even though SAR systems have been continuously in orbit for last twenty years. Due to the dynamic features of images and the complexity of microwave interaction with the earth's surface, the data analysis methods are often not sufficient advanced for operational use. There are many applications of wavelet transform in SAR image processing. Another possible extension is geographical feature detection algorithm which could be used for automatic feature detection for ribbon-like structures and thorough assessment of proposed method.

The wavelet based filters is superior to the standard filters because of its feature-sensitive selective in passing certain frequency data. Still there is improvement chance by incorporating the HVS models.