

Title of the Project

A project report
submitted in partial fulfilment of the
requirements for the degree of
Master of Technology
in
Signal Processing
by

Student ABC

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Under the guidance of
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I would like to express my deepest gratitude to

Abstract

List of Publications

Contents

Acknowledgements	i
Abstract	ii
1 Introduction	1
1.1 Background and Motivation	1
1.2 Problem Statement	2
1.3 Contribution	2
1.4 Outline of Report	2
2 Literature Survey	3
2.1 Image Denoising	3
3 Problem Formulation and Methodology	4
4 Experimental Validation	5
4.1 Segmentation using Swin-UNet	6
4.2 Classification Experiments	6
4.3 Dataset	6
4.4 Experimental Setup	6
4.5 Results	6
5 Conclusion and Future Work	8
5.1 Conclusion	8
5.2 Future Work	8
Appendix-1	9

List of Figures

1.1	Effect of additive noise and multiplicative for increasing noise level	1
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List of Tables

4.1	Classification results on the OCT dataset. We report Accuracy, Precision, Recall, F1-score, Weighted F1-score and Macro F1-score for individual class IRF, SRF, and PED pathologies. The best results in this table are shown in bold.	6
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Chapter 1

Introduction

1.1 Background and Motivation

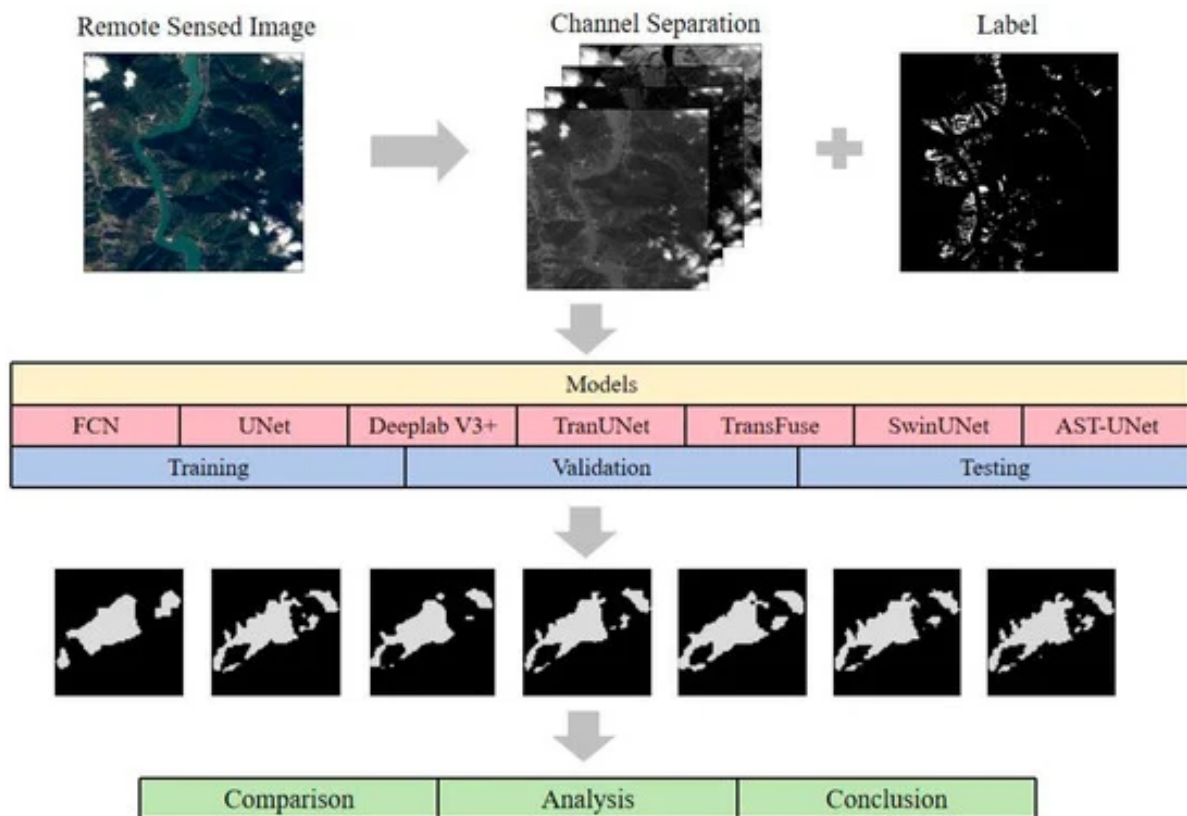


Fig. 1.1 Effect of additive noise and multiplicative for increasing noise level

1.2 Problem Statement

1.3 Contribution

1.4 Outline of Report

Chapter 2

Literature Survey

2.1 Image Denoising

Chapter 3

Problem Formulation and Methodology

Chapter 4

Experimental Validation

4.1 Segmentation using Swin-UNet

4.2 Classification Experiments

4.3 Dataset

4.4 Experimental Setup

4.5 Results

Table 4.1 Classification results on the OCT dataset. We report Accuracy, Precision, Recall, F1-score, Weighted F1-score and Macro F1-score for individual class IRF, SRF, and PED pathologies. The best results in this table are shown in bold.

Methods	Classes	Accuracy	Precision	Recall	F1-score	Weighted F1-score	Macro F1-score
Optic-Net [?]	IRF	0.959	0.759	0.928	0.835	0.466	0.530
	SRF	0.203	0.203	1.00	0.338		
	PED	0.255	0.255	1.00	0.407		
MobileNetV2 [?]	IRF	0.975	0.892	0.881	0.886	0.662	0.744
	SRF	0.951	0.889	0.870	0.879		
	PED	0.780	0.614	0.376	0.467		
Small Inception-ResNet-v2 [?]	IRF	0.931	0.751	0.925	0.829	0.715	0.760
	SRF	0.984	0.781	0.91	0.841		
	PED	0.933	0.519	0.795	0.608		
Xception Net [?]	IRF	0.977	0.911	0.880	0.895	0.758	0.806
	SRF	0.952	0.902	0.856	0.878		
	PED	0.796	0.580	0.729	0.646		
Concatenated Segmentation model (Ours)	IRF	0.842	0.751	0.832	0.789	0.702	0.734
	SRF	0.829	0.721	0.861	0.784		
	PED	0.775	0.554	0.743	0.628		
BinaryFlow Inception(Ours)	IRF	0.969	0.862	0.858	0.86	0.798	0.823
	SRF	0.948	0.861	0.887	0.873		
	PED	0.871	0.765	0.711	0.737		

$$\text{Macro F}_1\text{-score} = \frac{1}{C} \sum_{i=1}^C \text{F}_1\text{-score}_i \quad (4.1)$$

$$\text{Weighted F}_1\text{-score} = \sum_{i=1}^C \frac{N_i}{N} \cdot \text{F}_1\text{-score}_i \quad (4.2)$$

Chapter 5

Conclusion and Future Work

5.1 Conclusion

5.2 Future Work

Appendix-1

References

- [1] D. Huang, E.A. Swanson, C.P. Lin, J.S. Schuman, W.G. Stinson, W. Chang, M.R. Hee, T. Flotte, K. Gregory, C.A. Puliafito, J.G. Fujimoto. *Optical coherence tomography. Science*, vol. 254, no. 5035, pp. 1178–1181, 1991. American Association for the Advancement of Science.
- [2] Y. Le Montagner, E. D. Angelini, and J.-C. Olivo-Marin. "An unbiased risk estimator for image denoising in the presence of mixed Poisson–Gaussian noise."