*A Project Report on*

**AWS Cloud and Network Security**

*Submitted in partial fulfillment of the requirements for the award of the degree of*

**BACHELOR OF TECHNOLOGY**

**IN**

**ELECTRONICS & COMMUNICATION ENGINEERING**

*By*

**Yeluri Kranthi Babu 16A95A0436**

**Nersu Sudha Sai Sri 15A91A04G1**

**Gorrela Indrani 16A95A0429**

**Amit Raj Dev 15A91A04C3**

*Under the Esteemed guidance of*

**P.BALA SRINIVAS, M.Tech**

**Assistant Professor**



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**ADITYA ENGINEERING COLLEGE**

**An Autonomous Institution**

**(Approved by AICTE, New Delhi & Affiliated to JNTU, Kakinada)**

**ADITYA NAGAR, ADB ROAD, SURAMPALEM**

**2015-2019**

**ADITYA ENGINEERING COLLEGE**

**An Autonomous Institution**

**(Approved by AICTE, New Delhi & Affiliated to JNTU, Kakinada)**

**ADITYA NAGAR, ADB ROAD, SURAMPALEM**

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**



**CERTIFICATE**

This is to certify that the project report entitled **“AWS Cloud And Network Security*”*** is a bonafide record of the project work done by

**Yeluri Kranthi Babu 16A95A0436**

**Nersu Sudha Sai Sri 15A91A04G1**

**Gorrela Indrani 16A95A0429**

**Amith Raj Dev 15A91A04C3**

under my supervision and guidance, for the partial fulfilment of the requirements for the award of the degree of **Bachelor of Technology** in the Department of Electronics & Communication Engineering of Aditya Engineering College (A) from Jawaharlal Nehru Technological University, Kakinada for the year 2015-19.

**Head of the Department**

**V.SATYANARAYANA**

**Project Guide**

**P.BALA SRINIVAS**

**External Examiner**

**ACKNOWLEDGEMENT**

We take this opportunity as a privilege to thank all individuals without whose support and guidance we could not have completed our project in this stipulated period of time.

We express our deep sense of gratitude to our guide **Mr. P. Bala Srinivas** for his valued suggestions and inputs during the course of the project work, readiness for consultation at all times, his educative comments and inputs, his concern and assistance even with practical things have been extremely helpful.

We highly indebted ot our Head of the Department **Mr. V. Satyanarayana** for his motivational guidance and the vision in providing the necessary resources and timely inputs.

We are also thankful to **Dr. M. Sreenivasa Reddy,** Principal, Aditya Engineering College for providing appropriate environment required for this project and thankful to Faculty of Electronics and Communication Engineering Department for the encouragement and cooperation for this successful completion of the project.

**Yeluri Kranthi Babu 16A95A0436**

**Nersu Sudha Sai Sri 15A91A04G1**

**Gorrela Indrani 16A95A0429**

**Amith Raj Dev 15A91A04C3**

**ABSTRACT**

AWS Cloud is used to handle thousands of requests (traffic load) on a web portal when millions of users want to access the same webpage. When the user hits on a certain URL and if the requests are more on that URL the traffic load will be more. There will be lagging of the site and can’t be accessed by all the users at a time, to avoid this problem we are going to change the existing policies in AWS Cloud, and create virtual instance servers by using AWS.

This is to maintain auto-scaling and load balancing on a certain web portal. In Load Balancers, Elastic Load Balancing automatically distributes your incoming traffic across multiple targets, such as EC2 instances. Auto-scaling monitors your applications and automatically adjusts capacity to maintain steady and better performance at the lowest cost. Monitoring the atmosphere information of the area, In that temperature, humidity, raining status of the details. These are achieved by IoT Technology. Network security consists of the policies and practices to prevent and monitor unauthorized access, misuse, modification, or denial of a computer network and network-accessible resources.

Network security consists of the policies and practices to prevent and monitor unauthorized access, misuse, modification, or denial of a computer network and network-accessible resources. To connect different branches with security, we are implementing SITE TO SITE VPN. To overcome the network attacks, we are developing the Intrusion Prevention System. Cisco IOS Intrusion Prevention System (IPS) is an inline, these network security infrastructure are implementing in On-premises, not in a cloud.

**CONTENTS**

**Page No**

1. List of Figures i

2. List of Tables ii

3. Nomenclature iii

**1. INTRODUCTION 1-17**

1.1 Image 01

1.2 Digital Image Representation 13

1.3 Applications of Digital xxxxImage Processing 15

1.4 Motivation 16

1.5 Need of Image Fusion 16

1.6 Objectives and Goals 16

1.7 Software Requirements 17

1.8 Organization of Thesis 17

**2. LITERATURE SURVEY 18-30**

2.1 Introduction 18

2.2 Research Papers 18

2.3 Existing Image Fusion Techniques 21

2.3.1 IHS Transform 22

2.3.2 Principal Component Analysis (PCA) 22

2.3.3 Pyramid Techniques 23

2.3.4 Wavelet transforms 28

2.4 Drawbacks of Existing Methods 30

**3. IMAGE FUSION 32-37**

3.1 Definition of Image Fusion 32

3.2 Image Fusion Techniques 33

3.3 Steps In Image Fusion 34

3.4 Applications Of Image Fusion In Different Domains 35

**4. PROPOSED METHODOLOGY 38-47**

4. 1 Flowchart of the proposed method 38

4.2 NSCT (Non sub-sampled contourlet transform) 39

4.2.1 NSCT Pyramid Method 39

4.2.2Filter Bank 40

4.2.3 Applications of NSCT 42

4.3 SVD ( Singular Value Decomposition) 42

4.3.1 Singular Vectors 45

4.3.2 SVD 46

4.3.3 Power method for computing SVD 46

4.3.4Multi-Resolution Singular Value Decomposition 46

4.3.5 Applications Of SVD 47

**5. INTRODUCTION TO MATLAB 48-35**

5.1 Using Matlab Editor To Create M-Files 49

5.2 Getting Help 49

5.3 Saving And Retrieving A Work Session 50

5.4 Plotting Tools 53

5.5 Editor/Debugger 53

**6. RESULTS 59-66**

**7. CONCLUSION AND FUTURE SCOPE 67**

**REFERENCES 68**

**APPENDIX**

**LIST OF FIGURES**

**Fig.No Name of the Figure Page No**

1.1 Pixel Values in aBinary Image 3

1.2 Pixel Values in aGray Scale, Image Define Gray Levels 4

1.3 Color Planes of aTrue ColorImage 5

1.4 Pixel Values Index To Color Map Entries in Indexed Image 6

1.5 Pixel Coordinate System 8

1.6 Spatial co-ordinate system 9

2.1 Image fusion process in PCA 23

3.1 Image fusion 28

3.2 Image fusion steps 30

4.1 Flowchart of proposed algorithm 34

4.2 Pyramid decomposition 35

4.3 Schematic Diagram of NSCT based fusion Algorithm 36

4.4 NSCT decomposed schematic diagram 37

5.1 Matlab command window 46

5.2 Plotting window 47

5.3 Editor window 47

6.1 Resultant Images 52

i

**LIST OF TABLES**

**S.No Name of the Table Page No**

1. 1 Data classes supported by IPT functions 10

1.2 Image types and numeric classes 11

1. 3 Image types and conversion function 12

6.1 Performance comparison 58

ii

**Nomenclature**

CCD Charge coupled devices

LCD Liquid crystal display

TIFF Tagged Image file format

BMP Bitmap

EXIF Exchange Image file

GIF Graphics Interchange format

JPEG Joint photo graphic experts group

NSCT Non sub-sampled contourlet transform

CT Contourlet transform

SVD Singular Value Decomposition

NSP Non-subsampled pyramid

NSDFB Non-subsampled directional filter bank

MS Multispectral

PAN Panchromatic

SWT Stationary wavelet transform

DWT Discrete wavelet transform

ROLP Ratio of low pass pyramid

DCT Discrete cosine transform

PSNR Peak signal to noise ratio

SSIM Structural Similarity Index

iii